FontLAB

TransType

PRO

MAC, PC, POSTSCRIPT, TRUETYPE, OPENTYPE —
UNIVERSAL FONT CONVERTER

USER'S MANUAL FOR WINDOWS

Copyright ©1992-2005 by Fontlab, Ltd. All rights reserved.

Cover illustration: Paweł Jońca, pejot.com

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written consent of the publisher. Any software referred to herein is furnished under license and may only be used or copied in accordance with the terms of such license.

FontLab, *FontLab logo*, *ScanFont*, *TypeTool*, *SigMaker* and *AsiaFont Studio* are either registered trademarks or trademarks of FontLab, Ltd. in the United States and/or other countries.

Apple, the *Apple Logo*, *Mac*, *Mac OS, Macintosh* and *TrueType* are trademarks of Apple Computer, Inc., registered in the United States and other countries.

Adobe, *PostScript, Type Manager, InDesign* and *Illustrator* are trademarks of Adobe Systems Incorporated, which may be registered in certain jurisdictions.

Windows, *Windows 95, Windows 98, Windows XP* and *Windows NT* are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

IBM is a registered trademark of International Business Machines Corporation.

Macromedia, Fontographer and *Freehand* are registered trademarks of Macromedia, Inc.

StuffIt, the StuffIt clamp are trademarks of Aladdin Systems, Inc.

Other brand or product names are the trademarks or registered trademarks of their respective holders.

THIS PUBLICATION AND THE INFORMATION HEREIN IS FURNISHED AS IS, IS SUBJECT TO CHANGE WITHOUT NOTICE, AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY FONTLAB, LTD.

FONTLAB, LTD. ASSUMES NO RESPONSIBILITY OR LIABILITY FOR ANY ERRORS OR INACCURACIES, MAKES NO WARRANTY OF ANY KIND (EXPRESS, IMPLIED OR STATUTORY) WITH RESPECT TO THIS PUBLICATION, AND EXPRESSLY DISCLAIMS ANY AND ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSES AND NONINFRINGEMENT OF THIRD PARTY RIGHTS.

User manual release 3.0 [2/2005]

Contents

CONTENTS 3

INTRODUCTION 7

USER INTERFACE 9

Source Fonts List 10

Destination Fonts List 13

Pop-up Menus 14

Macro Pop-up 15

Command Buttons 16

CONVERSION PROCESS 17

Converting a Sample Font 18

Adding Fonts to the Source List 22
- Adding Macintosh Fonts 24
- Associating PostScript Data Files 25

Removing Fonts 26

Previewing Fonts 27

Setting Conversion Options 30
- General Conversion Options 31
- Destination File Options 33

PC to Macintosh Conversion 35
- TrueType Fonts 36
  - Changing Font Format 37
  - Reencoding 38
  - Symbol Encoding 39
  - Unicode Mapping 39
  - Defining the Source Encoding 40
  - Defining the Destination Encoding 42
  - Customizing Suitcases 45
- Type 1 Fonts 55
  - Changing Font Format 55
  - Reencoding 56
  - Metrics Files 59

Multiple Master Fonts 60
Suitcases 64
Bitmap Fonts 65

Macintosh to PC Conversion 66
Macintosh Font Preparation 67
Single file MacBinary or BinHex intermediate format 68
E-mail with attached font(s) 68
PC formatted diskette, ZIP or MO disks 69
MacDrive® utility and Mac formatted disks or CDs 69
Through a network from a WinNT/2000/XP workstation 69
Through special networking utilities and some Networking Operating Systems 70
Single Macintosh StuffIt archive 70
TrueType Fonts 71
Type 1 Fonts 72

TrueType<->Type 1 Conversion 73
Type 1 Options 74
General Type 1 Options 74
Metrics Options 75
Macintosh Suitcase Options 76
TrueType Options 77
General TrueType/OpenType TT Options 77
Embedding And Identification Options 80

OpenType Fonts 82
OpenType Features 83
Converting OpenType Fonts 84
OpenType PS Options 84
OpenType Layout Options 86
OpenType Properties 87
The Output Panel 89

FontLab (VFB) Font Conversion 90

TrueType Font Collection (TTC) Conversion 91

Other Types of Conversion 92

PYTHON PROGRAMMING 93

The Python Programming Language 94

Installing Python 95

Macro Pop-up Menu 96

Writing Programs 97
First Steps 97
Naming the Programs 99
The Programs Structure 100
TransType Pro Python Classes 101

TECHNICAL DETAILS 103
Type 1 Fonts 104
TrueType Fonts 105
Customizing Codepages 106

BIBLIOGRAPHY 107

SUPPORT 109

A NOTE ON INTELLECTUAL PROPERTY 111

APPENDIX A BASICS OF DIGITAL FONT ORGANIZATION 113
Definitions 114

Introduction

TransType Pro is a TrueType, PostScript Type 1 and OpenType font conversion utility. It can convert PC fonts to Macintosh, Macintosh fonts to PC, Type 1 fonts to TrueType or OpenType, TrueType fonts to Type 1 or OpenType, and OpenType fonts to TrueType or Type 1. Moreover it can do platform and format conversions at the same time. There are several important features that make TransType Pro different from other font conversion programs:

1. TransType Pro correctly converts fonts with Roman and non-Roman encoding and allows you to select both source and destination encoding while you convert fonts in either direction (PC–>Mac, Mac–>PC, TrueType–>Type 1 or OpenType, Type 1–>TrueType or OpenType, OpenType–>TrueType or Type 1). The font-previewing feature helps select proper encodings.
2. TransType Pro automatically controls the building of font suitcases when you convert families of PC fonts to Macintosh. You can move fonts from one suitcase to another, but in most cases it's unnecessary – TransType does it for you.
3. TransType Pro can automatically generate bitmap fonts when you convert to Macintosh Type 1 format.
4. TransType Pro can convert multiple master Type 1 fonts either into single master or into multiple master Type 1 fonts or into TrueType or OpenType fonts for any platform –PC or Macintosh.

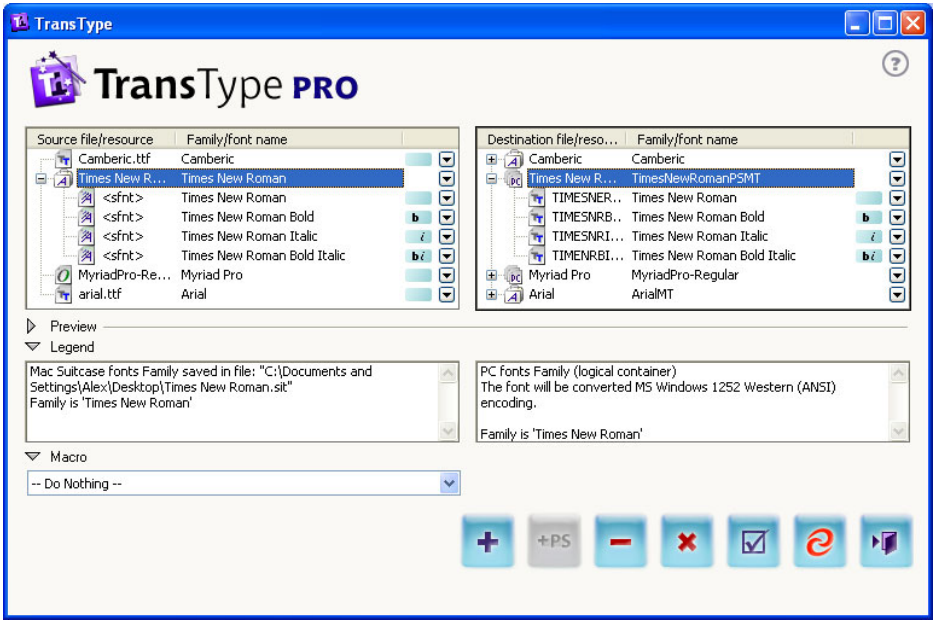
5. You can quickly and easily preview the fonts that are not installed in your System.
6. TransType Pro can convert from VFB (FontLab's internal format) into TrueType, OpenType or Type 1. TransType Pro can also convert from PC TrueType font collection (TTC) format.
7. TransType Pro can additionally process the converted fonts with Python macro scripts. The Python interpreter must be installed to use this feature.
8. TransType Pro can also accept fonts in .sit archives created with StuffIt Deluxe – a popular Macintosh file archiver.
9. TransType can read or write Macintosh files in industry-standard MacBinary or BinHex formats. Windows computers can't read native Macintosh files, but with TransType you can import or export these specially formatted Macintosh files on your Windows computer and use them immediately. TransType can also directly open Macintosh files if they are saved on a PC-formatted diskette or Zip disk, or are copied to a PC computer from a Macintosh through a network connection. If you are using MacDrive® you can access Macintosh-formatted media supported by MacDrive.

In this document we assume that you have a basic knowledge of computer fonts, font formats and encodings. Refer to documents from the Bibliography section for more advanced information and to Appendix A for the basics.

Note: Here and later, when speaking about font formats, we use the words *PC* and *Windows* as synonyms.

User Interface

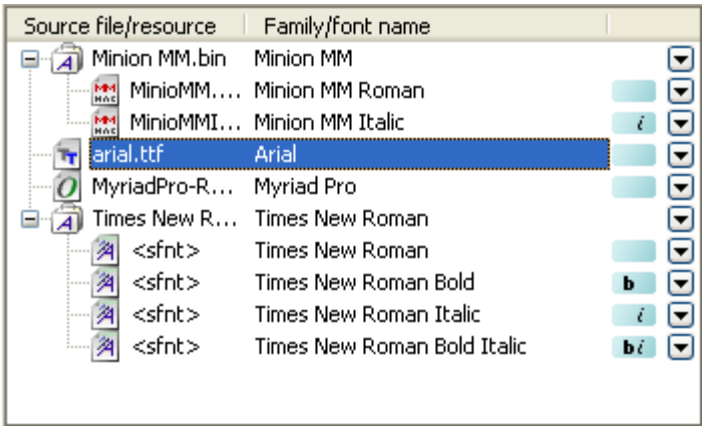
TransType's Main Window consists of several parts: the Source and Destination lists, the Preview field, the Legend fields, the Macro pop-up menu and the Command buttons.



TransType Main Window

Source Fonts List

The Source list contains the names of the fonts (PC and Macintosh in TrueType, OpenType, FontLab (VFB) or Type 1 formats) that you are going to convert. You can convert all different kinds of fonts in one step and TransType will automatically convert Macintosh fonts to PC and vice versa. TrueType and OpenType PS will be converted to TrueType and Type 1 to Type 1 by default.



Source Fonts List

As you can see, the presentation of different kinds of fonts in this list depends on the font's platform and type. The following icons are used:

	Macintosh font suitcase. Click on the icon (or the plus sign to the left of the icon) to see the contents of the suitcase. Click with the **Ctrl** key depressed to open all the suitcases. Click again with the **Ctrl** key down to close them all
	PC (MS Windows) TrueType font collection (TTC extension)
	Macintosh Type 1 font ('post' resource) usually referenced by the font suitcase. It is possible to add a Macintosh Type 1 font without the corresponding suitcase
	Macintosh multiple master Type 1 font
	Macintosh TrueType font ('sfnt' resource) inside a font suitcase
	PC (MS Windows) Type 1 font (usually has PFB extension)
	PC (MS Windows) multiple master Type 1 font (usually has PFB extension)
	PC (MS Windows) OpenType TT/TrueType font (usually has TTF extension)
	OpenType PS font (usually has OTF extension)
	FontLab 3 or FontLab 4 font in VFB format (usually has VFB extension)

The Source list has two main columns: the font file name and the font name.

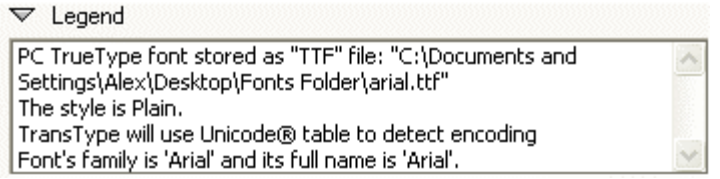
***Note*:** If you see the text "<sfnt>" instead of the file name it means that this is a 'sfnt' resource located inside a Macintosh font suitcase and doesn't have its own file name.

To the right of the font name you will see style icons, which give you the information about the font's style. Only 4 main styles can be recognized:

i	Font is Italic
b	Font is Bold
bi	Font is Bold Italic
	Font is Plain

The **Preview** field is located below the font list. It contains a short text preview of the font currently selected in the source list. You can switch the preview off by clicking the triangle at the left.

The **Legend** panel is located below the preview field. It includes a short description of the item currently selected in the source list:

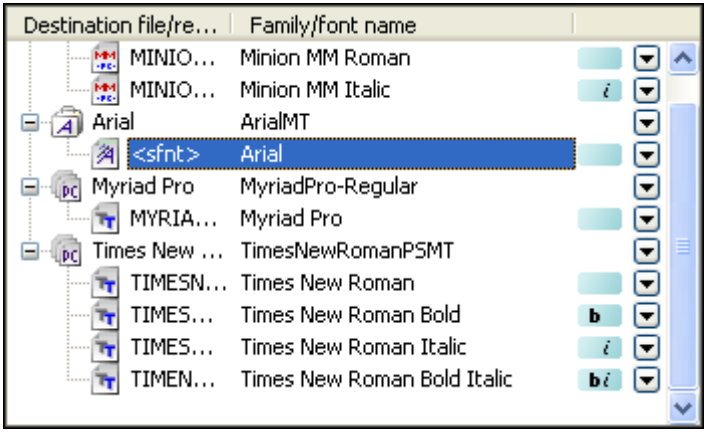

Legend
PC TrueType font stored as "TTF" file: "C:\Documents and Settings\Alex\Desktop\Fonts Folder\arial.ttf"
The style is Plain.
TransType will use Unicode® table to detect encoding
Font's family is 'Arial' and its full name is 'Arial'.

As with preview, you can hide the Legend panel by clicking the triangle at the left.

Multiple selection is implemented in the Source list to make it possible to manage several fonts at once. Use the **Shift** or the **Ctrl** key to select more than one item in the list. Then **right-click** on the selection instead of using the pop-up menu buttons at the right of the font names.

Destination Fonts List

The **Destination** fonts list is located in the right part of the TransType Main Window:



Destination Fonts List

The Destination list contains the names of fonts as they will look after conversion. If you are converting PC fonts to Macintosh it will contain Macintosh font suitcases that will be automatically generated by TransType. If you convert Macintosh fonts to PC, then you'll see "virtual" font suitcases that will contain PC font files united into a font family for easier maintenance in TransType. Click or **Ctrl**-Click on the icon (or the plus sign to the left) to open these suitcases and see their contents.

Icons in this list have the same meaning as in the Source fonts list. Multiple selection is implemented in the Destination list too. Use the **Shift** and the **Ctrl** keys to select more than one item in the list. The Destination list also has a **Legend** panel located below which contains a brief description of the selected item.

Pop-up Menus

The items in Source and Destination lists may contain pop-up buttons ( ) located at the right of the font and suitcase names. You can press these buttons to open pop-up menus where you can set the destination format, customize font conversion options, call for a family properties dialog or manipulate individual fonts and their styles.

To manage several selected fonts at once, right-click on the selection instead of using the pop-up buttons.

Macro Pop-up

One of the unique features of TransType Pro is an integrated macro programming language. With this feature you can program repeated tasks, define custom font transformations, and use TransType in many other powerful ways.

Macro programs in TransType are written in the well-known and well-documented Python programming language. TransType uses the standard version of the language so almost all macros written in Python will work in TransType. In addition to support of Python TransType provides a detailed set of classes and variables that open some of the font data structures to the programming interface.

The **Macro** pop-up menu is located below the Legend field in the Main Window:

The Macro pop-up is available only if the Python language interpreter is properly installed in the System. See the Python Programming chapter for details on installing and using Python in TransType Pro.

Command Buttons

Command buttons are located in the right-bottom area of the Main Window:

Here is a brief description of each button (from left to right):

Add	Use this button to add fonts to the Source Fonts list and prepare them for conversion. Note that you can add fonts to the Source list by simply drag-dropping them to the Main Window from the Explorer
Attach	Use this button if you are converting Macintosh fonts to PC to let TransType know which files containing PostScript font data to use with the currently selected font suitcase. Refer to the Associating PostScript Data Files section below for more information about this command
Clear	Press this button to remove the currently selected font(s) from the Source or Destination list. Of course, the corresponding item(s) will also be removed from the other list
Clear All	Press this button to remove all the fonts from both lists
Preferences	Press this button to open the Preferences dialog containing various TransType settings
Convert	Press this button to begin the font conversion process. Note that it may be disabled in some circumstances – this means that you didn't provide enough information for the conversion process or that one of the fonts to be converted is damaged or improperly constructed.
Quit	Use this button to finish working with TransType and exit the program.

Conversion Process

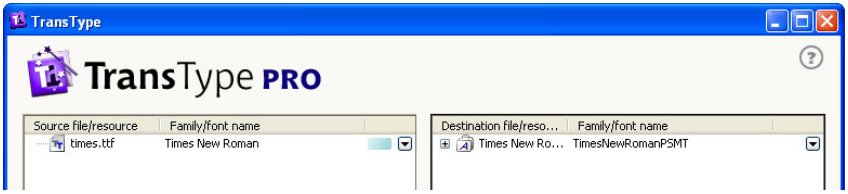
To convert fonts, you have to:

- Add the fonts you want to convert to the Source list. Remember that Macintosh fonts must usually be in MacBinary or BinHex format.
- If you are converting Macintosh fonts to PC you may have to associate data files with the source suitcases. Usually, however, TransType does this automatically.
- Check and define the encoding and codepage settings for all the fonts in the Source list, if necessary. The values selected in the Preferences dialog will be used by default.
- If necessary, change the destination font format (if you are converting TrueType fonts to Type 1 or vice versa).
- If necessary, organize destination suitcases (if you are converting PC fonts to Macintosh) and adjust the fonts' properties.
- If necessary and Python is installed, select the program in the **Macro** pop-up menu which will be executed during the main conversion.
- If the **Convert** button is disabled, fix possible problems by following the recommendations located in the legend panel below the Destination Fonts list.
- Press the **Convert** button.

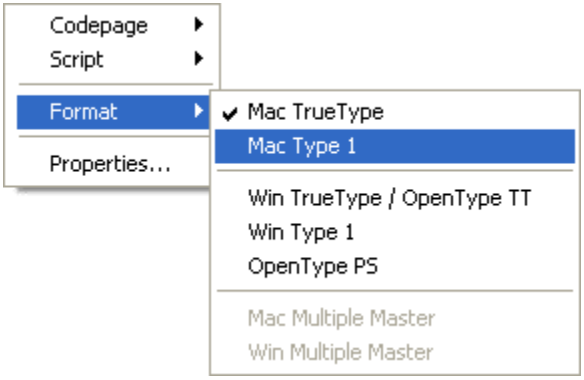
Converting a Sample Font

In this section we will show you how to convert one of the Windows system fonts to Macintosh font format. We will not provide a detailed description of all operations here (it's provided later in the chapter) but will show you the main points as an example.

1. Open the ***Fonts*** folder in your ***Windows*** folder with the help of ***Explorer*****. (C:\\windows\fonts)**
2. Copy the ***Times New Roman*** font from the ***Fonts*** folder to the Desktop (the Windows OS restricts access to the fonts in the ***Fonts*** folder so they are not directly available to TransType or to font editors).
3. Drag-and-drop the font from the Desktop right onto the TransType Pro application icon on your desktop (or open TransType from your ***Programs*** menu and drag-drop the font into the Source list). TransType will be launched and you will see its Main Window with the ***Times New Roman*** font in the Source list:



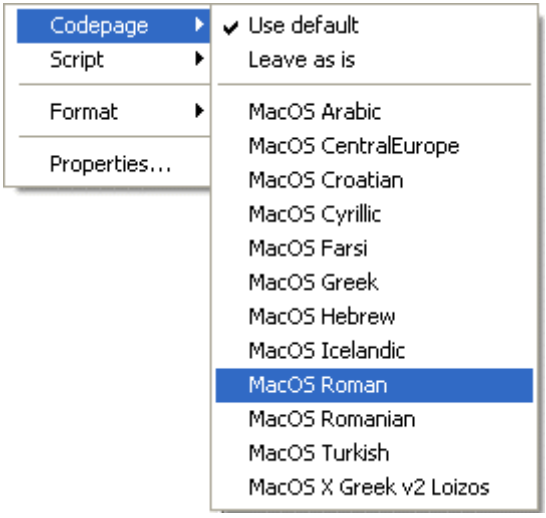
4. Look at the Destination Fonts list. Press the pop-up menu button to the right of the font name and observe the menu contents:



Destination Format Submenu

As you can see there is an option to change the destination font format. Let's, for example, select the **Mac Type 1** option in the **Format** submenu. The ***Times New Roman*** font will be converted from Windows TrueType to PostScript Type 1 format for Macintosh in this case.

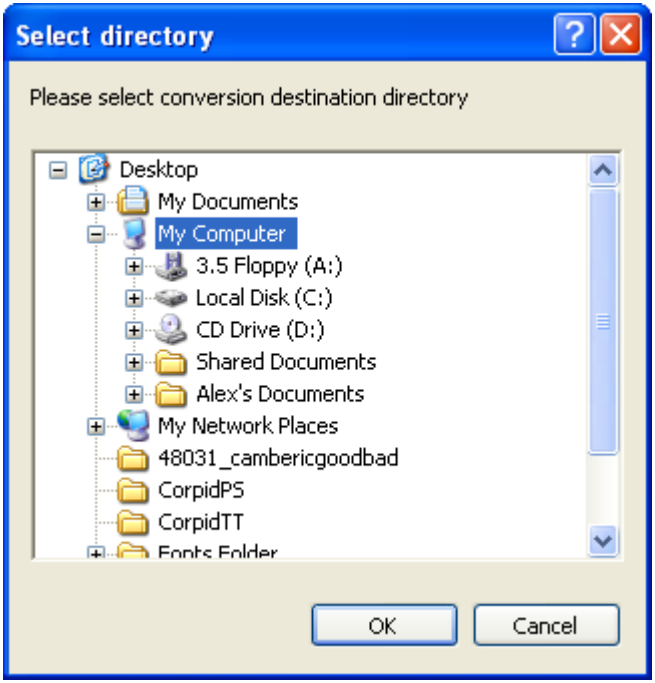
5. Now you must select the encoding for the fonts you are going to generate. Press the pop-up menu button for the second time and select the **MacOS Roman** codepage in the **Codepage** submenu:



Destination Codepage Submenu

6. As the source ***Times New Roman*** font is a Unicode font, you needn't define the encoding for it in the Source Fonts list. Click on the button at the bottom of TransType Main Window to start the conversion process.

7. If you haven't defined the default destination directory in the **Preferences** dialog, TransType will ask you to choose the destination for the fonts generated:



Select Directory Dialog box

We recommend you create a new directory for the destination fonts. This will help when more than one font consisting of more than one file are converted at a time. In any case, select the destination directory and press the **OK** button.

TransType will create two files in MacBinary format: one with the Macintosh PostScript and another with the Macintosh suitcase. Both files will be needed to install the font on a Macintosh.

8. After the conversion process has finished, the Source and the Destination Fonts lists remain – so that you can convert the same fonts to another format or with other settings if you want. To finish working with TransType Pro, press the rightmost button at the bottom of the Main Window and the program will quit.

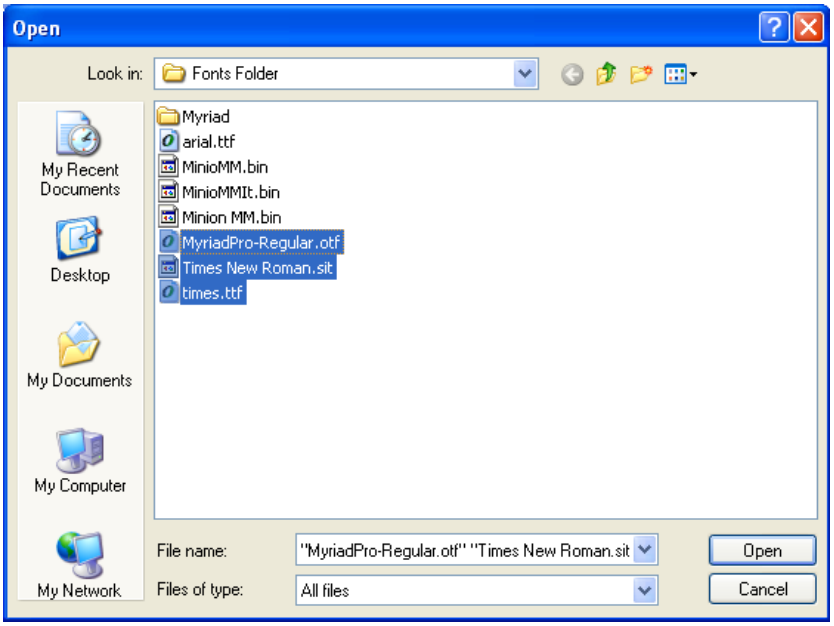
OK, so now you know how to do a simple PC->Mac conversion. It's time to look at TransType Pro's features in detail.

Adding Fonts to the Source List

To add one or more fonts to the Source fonts list you can use two methods: the **Add** button or **drag-and-drop**.

To add fonts with the Add button:

1. Press the **Add** button at the bottom of TransType's Main Window . You will see the standard Windows **Open** dialog box:



Open Fonts Dialog box

2. Select the fonts you want to add for processing and press the **Open** button. TransType will open every font selected, check it, and extract the information necessary for further processing. Remember, Macintosh fonts must usually be in MacBinary or BinHex format (see details below).

To add fonts using the drag-and-drop method:

1. Open the directory with the fonts.
2. Select the fonts you want to add and drag them to TransType's Main Window.

Note: You can drag-and-drop not only individual fonts but also folders containing many fonts. Subfolders are processed recursively.

Note: When you add Macintosh Type 1 fonts for conversion you MUST add suitcases along with the printer font files. If you cannot identify a suitcase file add all files that you suspect contain font data.

Note that filenames for the PC fonts that will be created during processing are generated automatically following the 8.3 requirements – this is necessary to maintain compatibility with older versions of Windows and DOS. This option is customizable for Windows fonts in **Preferences/ General/Font Files Naming**.

Adding Macintosh Fonts

Macintosh and PC have different file systems, so to access traditional Macintosh (pre-MacOS X) fonts on a PC you have to perform some additional steps or sometimes use third-party programs. This process is described in full detail in the Macintosh to PC Conversion chapter on page 66, and we strongly recommend you read it before trying to convert Macintosh font files with TransType.

After you have added fonts to the Source list they will appear according to their structure. Thus Macintosh font suitcases appear as two-level items and PC font files as separate files. In the Destination list you will see the fonts in their post-conversion form – PC fonts that will be converted to Macintosh formats will appear united in suitcases. Macintosh fonts converted to PC will keep their "suitcase" structure for easier navigation.

Associating PostScript Data Files

On the Macintosh Type 1 fonts are defined in two files: a suitcase file that contains data for the whole font family and a separate PostScript data file for each font. So if you have a family of Type 1 fonts containing 3 styles you will have 4 files: a suitcase file and a PostScript data file for each style.

The Mac OS automatically associates data files and suitcases using special rules based on file name. However during conversion of Macintosh files into MacBinary or BinHex format the files may be renamed and automatic association will not be possible. Fonts for which TransType cannot automatically find data files are highlighted in red in the Source Fonts list.

To manually associate font data files with a suitcase you must press the **Attach** button. You will then see a file dialog where you must select one or more Macintosh files which contain font data files. This is not easy since the file names are usually truncated. Then try adding all files that you suspect contain font data. TransType will open the selected files and try to associate the font data files that they contain with one of the suitcases currently open in the Source Fonts list.

Removing Fonts

If you added fonts to the Source list by mistake or you were going to convert them but then changed your mind, you can easily remove some fonts from the list. Select one or more fonts in the list by using the **Shift** and **Ctrl** keys and then press the **Clear** button at the bottom of the Main Window. You can remove item(s) from the Destination list as well. Of course, the corresponding item(s) will also be removed from the Source list.

To remove all the fonts from both lists, press the **Clear All** button.

Previewing Fonts

After you have added fonts to the Source list you can preview the source fonts and how they will be converted in a different encoding.

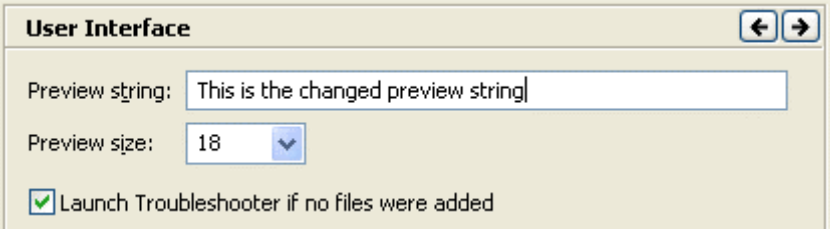
There is a plus sign to the left of each suitcase icon. Click on this sign or the icon itself to see the contents of the suitcase. Holding down the **Ctrl** key while you click will show the contents of all the suitcases in the list.

The **Preview** field below the Source and Destination lists shows you the text preview for the font selected in the Source fonts list:

Font Preview Field

You can open and close the Preview field at any time by clicking the gray triangle.

The text in the preview is customizable. You can change the text string and its size on the **General Page** of the **Preferences** dialog:

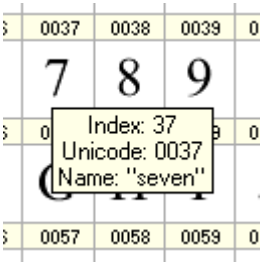


To have a look at the particular font character set, double-click the font icon (not the suitcase icon) in the Source or Destination list. The font will open in the Preview window:

Font Preview Window

This window consists of two main parts: the font character chart and the codepage options. If you opened this window from the Destination Fonts list of the Main Window, you will see the destination font character chart preview. Switch between the source and destination preview by clicking on the corresponding tabs at the top of the chart.

The character chart contains the font glyphs' preview and their position in the currently selected encoding. Each character has a caption with its Unicode index. **To see the code and the name of the particular character**, just move the mouse cursor to the character's cell:



To change the encoding in the preview, use the **Codepage** pop-up menu at the bottom of the window. Note that by changing the codepage in the source or destination character chart preview you also define the source or destination encoding for conversion (see the next section for details).

To get access to all the possible codepages in the Codepage pop-up menu, uncheck the checkbox to the right of the menu. The **Codepage** pop-up menu will contain not just Windows or Macintosh codepages, but all codepages from the *Program Files/Common Files/FontLab/Codepage* and *Program Files/Common Files/FontLab/TransType Pro/Codepage* directories on your hard disk.

With the help of the TransType font preview feature you can easily define the appropriate conversion encodings for each font in the Source list.

Note: You cannot set different encodings for different fonts in the same Macintosh suitcase or PC font family. When you set the encoding for one font in a suitcase (family) you set it for all the fonts in the suitcase (family).

Setting Conversion Options

After you have added fonts to the Source list (and the resulting font names have appeared in the Destination list) TransType usually is ready to begin conversion using the default settings. But sometimes you may need to change the conversion options (particularly the destination font format), the methods that TransType uses to reencode fonts and, if you are converting PC fonts to Macintosh, the styles of the generated fonts and their placement in suitcases.

Conversion of fonts between three main font formats – PostScript Type 1, OpenType PS and TrueType – is the feature that makes TransType Pro an advanced product. This conversion is not trivial and demands many options to be set correctly. Sometimes it is not possible to convert a font from one format to another without loss of font quality. That is why we will describe format conversion separately.

Reencoding of fonts is a very important feature of TransType Pro too. This is necessary because Windows and Macintosh use different encodings to map codes in the 0-255 range to characters located in the font. Usually the first 128 characters are encoded the same way, but other characters, located in the 128-255 code range are not. Moreover, encoding of fonts is highly dependent on the language for which the font was designed and in no language is the Macintosh encoding the same as the one used in Windows.

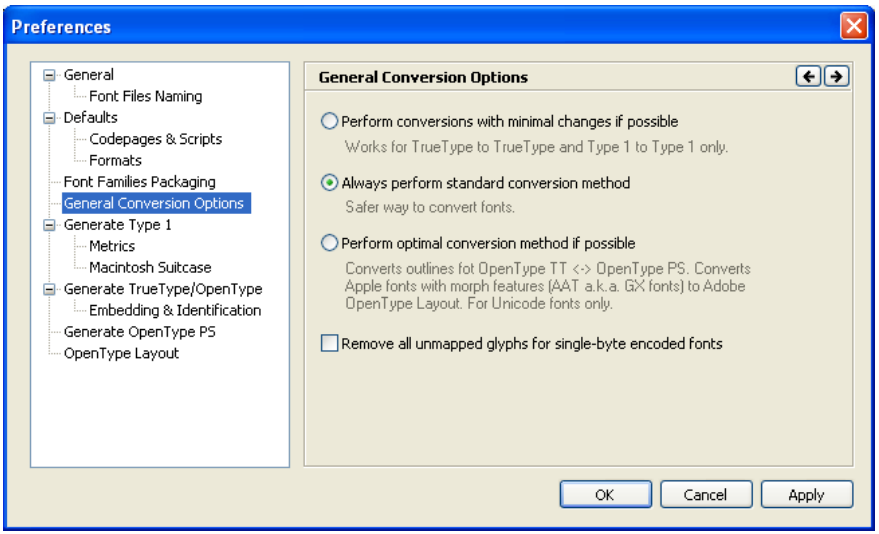
The method which the two systems use to identify font styles is also very different. On the Macintosh, fonts that comprise a font family are grouped into a font suitcase. On Windows all the font files are separate and the system links them into the font family using style-identification flags set in each font.

We will give you a detailed description of each operation you can apply to customize the font conversion process. The descriptions are grouped in sections for each platform/format combination.

But we will describe the most common and simple setting for the conversion process here in this section.

General Conversion Options

Click the **Preferences** button at the bottom of the Main Window and refer to the **General Conversion Options Page** of the **Preferences** dialog:


Preferences
General
Font Files Naming
Defaults
Codepages & Scripts
Formats
Font Families Packaging
General Conversion Options
Generate Type 1
Metrics
Macintosh Suitcase
Generate TrueType/OpenType
Embedding & Identification
Generate OpenType PS
OpenType Layout
General Conversion Options
Perform conversions with minimal changes if possible
Works for TrueType to TrueType and Type 1 to Type 1 only.
Always perform standard conversion method
Safer way to convert fonts.
Perform optimal conversion method if possible
Converts outlines fot OpenType TT <-> OpenType PS. Converts Apple fonts with morph features (AAT a.k.a. GX fonts) to Adobe OpenType Layout. For Unicode fonts only.
Remove all unmapped glyphs for single-byte encoded fonts
OK
Cancel
Apply

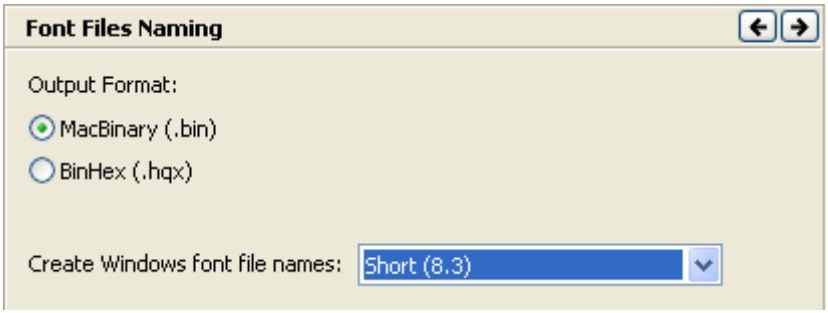
General Conversion Options Page of the Preferences Dialog

These general options are quite important. They actually switch between different conversion methods implemented in TransType Pro:

Perform conversion with minimal changes if possible	If this option is selected, TransType will try to use our old conversion engine first introduced in TransType 1.x instead of the new FontLab conversion engine implemented in TransType Pro. But switching on other options (like **Remove all unmapped glyphs...** or **Always decompose composites**) will force TransType Pro to use the standard conversion method anyway. Moreover, the usage of TransType 1.x engine is possible only for conversion from Type 1 to Type 1 and TrueType to TrueType
Always perform standard conversion method	If this option is selected, TransType Pro will use the new FontLab conversion engine. This conversion algorithm allows you to convert Type 1 to TrueType and vice versa; and vfb files to other formats. The standard method may be used even when this option is off and another method is selected
Perform optimal conversion method if possible	If this option is selected, TransType Pro will not decompile OpenType tables of the source font, but will perform only the operation of "font flavor changing". I.e. convert the glyph outlines. All the features are preserved
Remove all unmapped glyphs for single-byte encoded fonts	If this option is checked, TransType Pro will remove those glyphs of the source font that are not referenced by the destination codepage. The new font will become more compact. This option is off and all characters preserved by default. If it is on it is ignored when the **Perform optimal conversion method** option is also on.

Destination File Options

When TransType converts fonts to Macintosh format, it saves them in MacBinary (.bin) or BinHex (.hqx) files. You may choose what format to use in the **General/Font Files Naming Page** of the **Preferences** dialog:

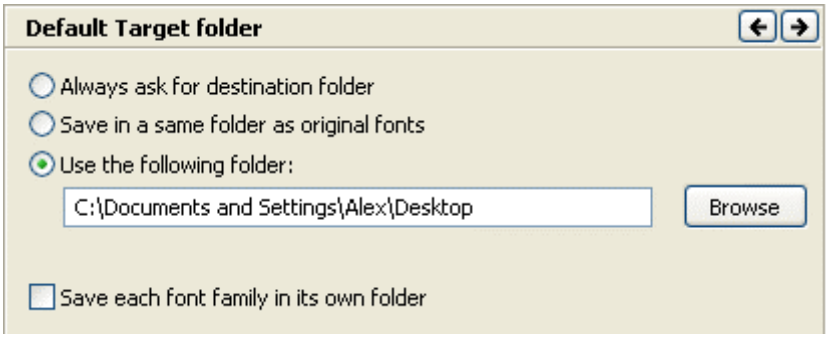


Use the **General/Font Files Naming Page** of the **Preferences** dialog to define the file naming scheme for Windows output fonts:

The options described here are used for generating font files in any Windows format:

Short (8.3) name	If this option is checked, TransType will generate file names for Windows fonts in DOS notation for more compatibility. This option is on by default
Long based on PS Font Name	If this option is checked, TransType will generate long file names. It will use the Font Name fields to generate file names
Long based on Full Font Name	If this option is checked, TransType will generate long file names and will use the Full Font Name fields.

Use the **Defaults Page** of the **Preferences** dialog to choose the place where new fonts will be stored:


Default Target folder
Always ask for destination folder
Save in a same folder as original fonts
Use the following folder:
C:\Documents and Settings\Alex\Desktop
Browse
Save each font family in its own folder

Click the **Always ask for destination folder** radio button to make TransType open the standard directory selection dialog for each conversion session. Click **Save in the same folder as original fonts** to let TransType save the converted fonts in the same place as the input fonts reside. To specify a particular folder, click the **Use the following folder** option and select your custom destination directory on the disk where you would like the converted fonts to be stored.

And finally, if you check the **Save each font family in its own folder** option, then a separate folder will be created for each converted family in the folder selected as the destination folder. This is particularly useful for creating fonts in the Type 1 format.

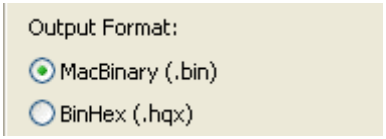
PC to Macintosh Conversion

The following key points are important when PC fonts are converted to Macintosh format:

1. Only Macintosh font files have a resource-based structure.
2. Fonts that belong to a font family have to be united in a Macintosh font suitcase structure.
3. Type 1 font files on the Macintosh stay separate from the font suitcase files and are linked to the Macintosh font resources using name reference methods, similarly to the implementation on the PC platform.
4. Type 1 fonts on the Macintosh need to have at least one accompanying bitmap font file (NFNT resource) for each font style.
5. Encoding, even for the Latin fonts, is different on Macintosh and PC.
6. Most PC fonts are encoded using Unicode, but in some cases simulated encodings are used.

In order to simplify things we describe only OpenType TT/ TrueType to TrueType and Type 1 to Type 1 conversions in this section. The differences of conversion between TrueType and Type 1 formats are described later in the TrueType<->Type 1 Conversion section. OpenType PS format is discussed in the separate OpenType Fonts section.

When TransType converts fonts to Macintosh format, it saves them in MacBinary or BinHex files. You may choose what format to use in the **General/Font Files Naming Page** of the **Preferences** dialog:



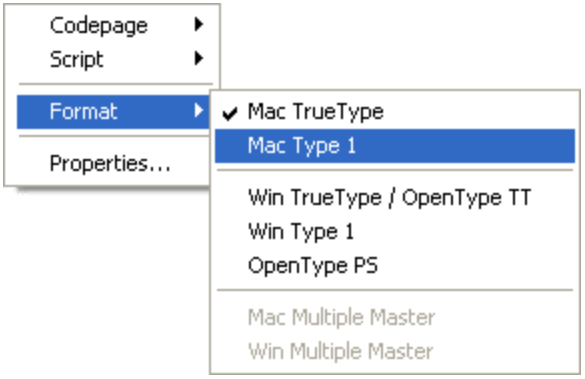
TrueType Fonts

When you add OpenType TT/ TrueType fonts to the Source fonts list TransType Pro does the following:

1. Opens the TrueType font file and extracts information about all the available glyphs, the Unicode mapping data, the font names and the font style (plain, bold, italic or bold-italic).
2. Tries to detect which encodings this font can support.
3. If several added OpenType TT/ TrueType fonts belong to the same family (the family name is the same and the style information is different), builds a destination font suitcase.
4. Prepares for PC OpenType TT/ TrueType to Macintosh TrueType conversion.

Changing Font Format

By default PC OpenType TT/ TrueType will be converted to Macintosh TrueType, but you can change the destination font format. Press the pop-up menu button located at the right of the suitcase name in the Destination list to open the following pop-up menu:



Destination Format Pop-up Menu

Select the platform and the type for the destination font.

- ✓ ***Tip***: If you have multiple selections in the Destination list, your choice will be applied to all selected fonts. But you must **right-click** on the selection instead of using the pop-up menu button at the right of the font name.
- ✓ ***Tip***: You can change the default destination platform and format in the **Defaults/Formats Page** of the **Preferences** dialog.

Reencoding

Source TrueType fonts can have the following encodings:

1. Normal Unicode encoding. In this case all characters are assigned to their proper Unicode indexes. This makes it very easy to determine to which languages they belong and how they can be used.
2. Normal Symbol encoding. The codes in the 0-255 range are mapped to symbolic or pictorial characters.
3. Simulated Symbol encoding. Symbol encoding is used to map normal alphabet characters of a language to the 0-255 codes.
4. Simulated Unicode encoding. Unicode indexes of the Latin language are used to map characters of some other language to the 0-255 codes.

Only encodings 1 and 2 (normal Unicode and Symbol) give full information about mapping codes to characters. All other cases require you to make some additional definition(s). You must tell TransType which encoding is simulated by the Symbol or Latin Unicode indexes. When TransType gets this information from you it can assign proper Unicode indexes to characters and treat this font as a case 1 in our list. Using this method we can limit the number of potential source encoding configurations to two: Unicode and Symbol.

Symbol Encoding

Symbol encoding is usually used to map symbolic or pictorial characters to the 0-255 code space. No reencoding is necessary when you convert such fonts to Macintosh format, so TransType will simply copy the characters and you will use the same codes you used on the PC to access the characters.

Unicode Mapping

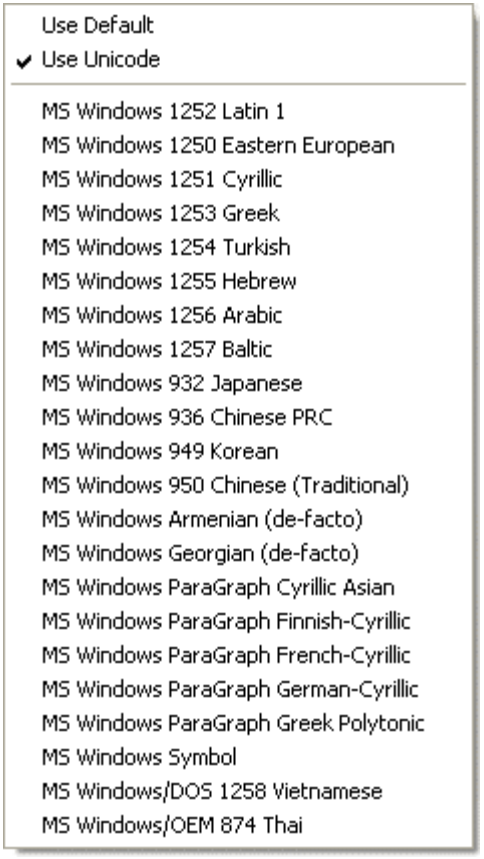
In the case of Unicode mapping in the source font all we need to do is to convert this encoding according to the Macintosh requirements. The problem is that on the Macintosh we can use only codes in the 0-255 range to access characters. This rule is not true in MacOS X, but we will use the older requirements to let you build Macintosh fonts that will work on all Macintosh systems. So we need to carefully use this space.

Every language used on the Macintosh has a codepage mapping table that determines how characters are mapped to the 0-255 code space. When we know which characters are in the source font (with the help of Unicode indexing) and select a Macintosh codepage we can easily build a correctly mapped Macintosh TrueType font.

We'll describe below all the operations that you might need to perform to make a correctly encoded Macintosh TrueType font.

Defining the Source Encoding

When you add a PC TrueType font to the Source list you can look in the legend field below it. If it says “TransType will use Unicode table to detect encoding”, that means that the font has a valid Unicode mapping table and the conversion is very simple. The Unicode table is used by default in this case, but you have the option to change the source encoding. Press a pop-up menu button at the right of the font name and the pop-up menu will appear:


Use Default
✔ Use Unicode
MS Windows 1252 Latin 1
MS Windows 1250 Eastern European
MS Windows 1251 Cyrillic
MS Windows 1253 Greek
MS Windows 1254 Turkish
MS Windows 1255 Hebrew
MS Windows 1256 Arabic
MS Windows 1257 Baltic
MS Windows 932 Japanese
MS Windows 936 Chinese PRC
MS Windows 949 Korean
MS Windows 950 Chinese (Traditional)
MS Windows Armenian (de-facto)
MS Windows Georgian (de-facto)
MS Windows ParaGraph Cyrillic Asian
MS Windows ParaGraph Finnish-Cyrillic
MS Windows ParaGraph French-Cyrillic
MS Windows ParaGraph German-Cyrillic
MS Windows ParaGraph Greek Polytonic
MS Windows Symbol
MS Windows/DOS 1258 Vietnamese
MS Windows/OEM 874 Thai

Source Encoding Pop-up Menu

✓ ***Tip***: Press and hold down the **Ctrl** key on the keyboard before pressing the pop-up menu button to get access to all the possible codepages.

✓ ***Tip***: It is possible to change the source encoding for multiple selected items in the Source list at once. But you must **right-click** on the selection instead of using the pop-up menu button at the right of the font name.

When the font doesn't have a Unicode table or is encoded as a symbol font, the legend will not say that the font is "Unicode" and you will **have to use** the encoding pop-up menu. The **Use Unicode** item will be disabled in this case and you have to determine which encoding the source font has. The first item is **Use Default:** this means that TransType will use the codepage currently selected as default in the **Defaults/Codepages & Scripts Page** of the **Preferences** dialog. The other items in the dropdown list are the names of codepages. Select one of these codepages if you know that that codepage is used in the source font.

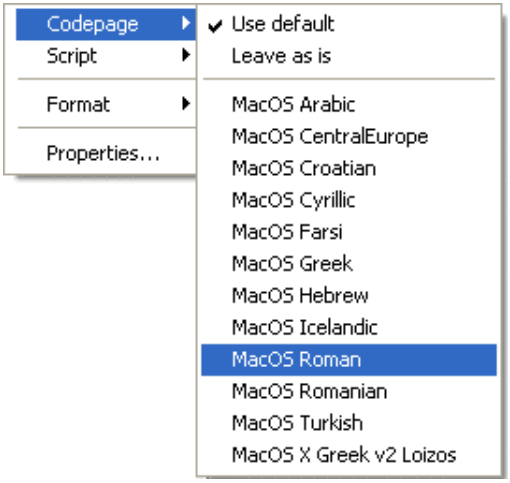
For example, if the source font is encoded as a symbol font but you know that actually it is a Cyrillic font, you should choose the **MS Windows 1251 Cyrillic** codepage in the pop-up menu and TransType will assign the correct Unicode indexes to all characters.

If you know that the source font is really a Symbol or pictorial font, select any item in this menu – it doesn't matter.

***Note*:** When a definition of the source codepage is necessary but none is selected (the default value is set to **Unspecified** and **Use Default** is selected in the pop-up menu) TransType will color the font's name in red and will disable the **Convert** button until you specify the source encoding of the font.

Defining the Destination Encoding

When you define the source encoding for a TrueType font you may also define the destination encoding. Press the pop-up menu button located at the right of the suitcase name in the Destination list to open the following pop-up menu:



Destination Codepage Pop-up Menu

The menu contains the following items:

Codepage	Used to assign a destination codepage to the font
Script	Select the script identifier for the font as required by the Mac OS
Format	Used to change the destination platform or font format
Properties...	Select this command to open the **Properties** dialog where you can customize the properties of the destination font

Assigning the Codepage

In the **Codepage** submenu you can see three common commands and a list of Macintosh codepage names:

Use Default
Use the destination codepage selected as the default in the **Preferences** dialog.

Unicode
Is not usable in the case described here.

Leave as is
Do not reencode the source font – any selection in the Source list pop-up menu is ignored.

A list of potential codepages to which the font can be reencoded follows these three commands. The number of available codepages depends on the number of characters in the font.

When TransType finally gets the information about the Unicode indexes to which the font characters are mapped (from the font or after you have assigned a codepage to the source font), it knows which destination codepages this font can support and shows only these codepages in the destination encodings menu.

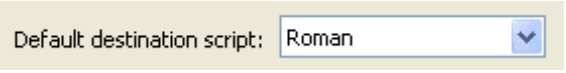
- ✓ ***Tip***: To force TransType to include all the possible codepages, press and hold down the **Ctrl** key.
- ✓ ***Tip***: It is possible to change the destination codepage for multiple selected items in the Destination list at once. But you must **right-click** on the selection instead of using the pop-up menu button at the right of the font name.

Assigning a Script Code

After you have selected the source and destination codepages, assign a script code to the font using the **Script** submenu. Note that for most Macintosh encodings when you select the destination codepage TransType will automatically select the correct script code.

✓ ***Tip***: If you have multiple selection in the Destination list, your choice will be applied to all selected fonts. But you must **right-click** on the selection instead of using the pop-up menu button at the right of the family name.

Use the **Defaults/Codepages & Scripts Page** of the **Preferences** dialog to select the script code that will be used by default:



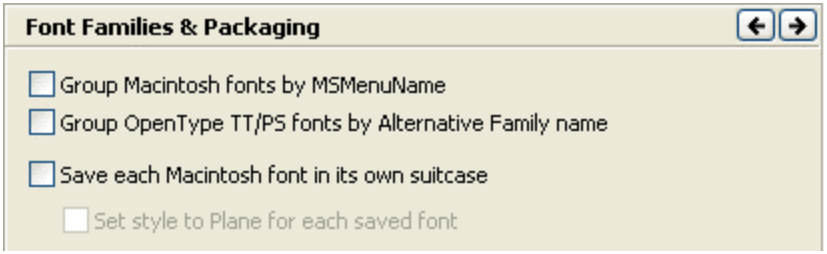
To summarize the process of font reencoding:

1. TransType determines the Unicode indexes of all the characters in the source font. It does this automatically if the source font has a valid Unicode table or with your help when you select the source encoding in the source pop-up menu.
2. Depending on the selection you made in the Destination list's pop-up menu TransType maps up to 256 Unicode indexes to the 0-255 code space as is required by the Mac OS.
3. A script code is assigned to the font accordingly to the selected Script.

Customizing Suitcases

When you convert several fonts that form a font family on a PC, TransType will automatically combine these fonts into a Macintosh font family suitcase. If for some reason you don't want TransType to do this, you have the following options:

1. Force TransType to put all fonts in separate suitcases by checking **Save each Macintosh font in its own suitcase** on the **Font Families Packaging Page** of the **Preferences** dialog:

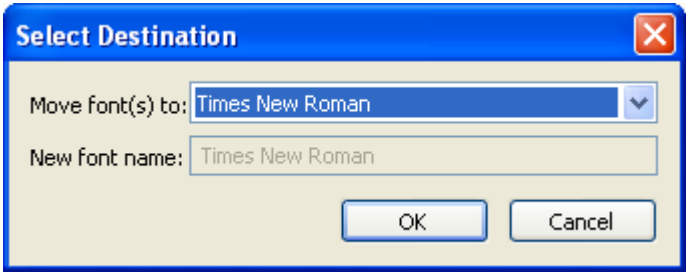

Font Families & Packaging
Group Macintosh fonts by MSMenuName
Group OpenType TT/PS fonts by Alternative Family name
Save each Macintosh font in its own suitcase
Set style to Plane for each saved font

   This is unusual and we do not recommend you switch on this option. But if you do, the **Set style to Plain for each saved font** option is recommended to simplify the usage of the fonts. When this option is on, all fonts that are placed in separate suitcases will have the plain style flag, even if the original fonts are not plain.

2. Exclude the font from the current suitcase and move it into the new one. To do this, position the mouse cursor on the font (not suitcase) you want to move and press the right mouse button or use the pop-up button (▾). Select one of the commands in the pop-up menu:

   Move item to a new suitcase – to move the font from the current suitcase to the new suitcase that will contain only this font.

   Move item to... – to open the **Select Destination** dialog box and choose a destination suitcase:



Select Destination Dialog box

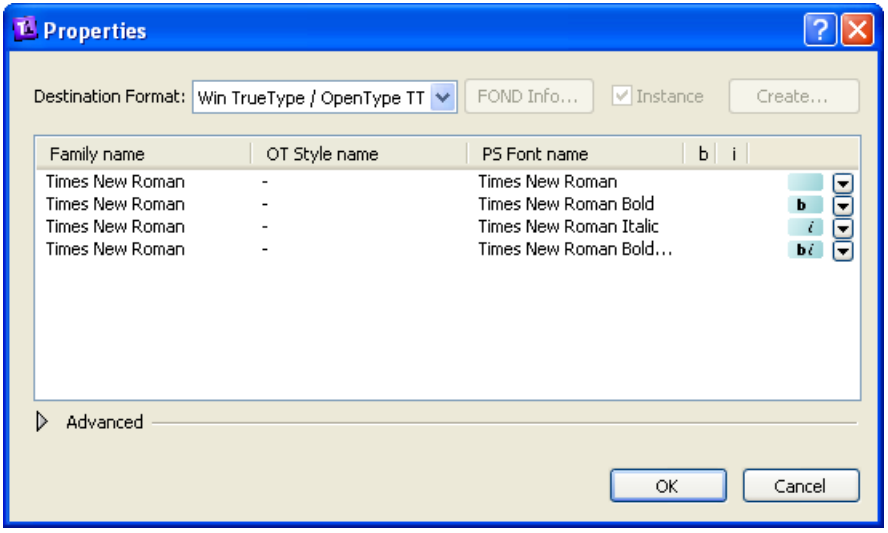
In the **Select Destination** dialog box select the suitcase to which you want to move the font in the **Move font(s) to** pop-up menu or select **New Suitcase** to extract the font into a new empty suitcase. Change the font name in the editing field below if necessary. Note that if any fonts in the suitcase have the same style (for example, if you have two italic fonts), then the **OK** button is disabled. Correct the problem or press **Cancel** to close the dialog.

3. Change the style of the particular font in the suitcase by selecting the appropriate item in the menu which appears when you press the right mouse button or use the pop-up button (▾):

Style Pop-up Menu

Font Properties

You can easily edit the destination font suitcase information. Select the suitcase in the Destination list. Press on the pop-up button to the right and select the **Properties** command in the pop-up menu. The **Properties** dialog box appears:

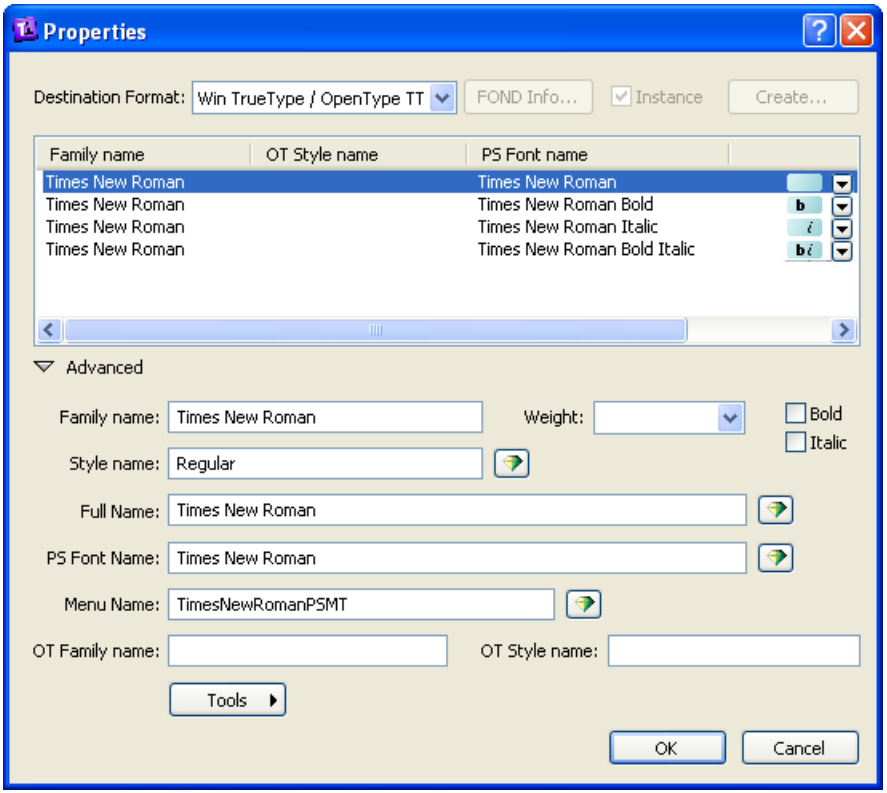


Font Properties Dialog box (compact)

The compact version of the dialog allows you to:

1. View the names and styles of the fonts in this family.
2. Change the destination platform and format in the **Destination Format** pop-up menu. Note that you can convert fonts without changing the platform or the font format (for example, Mac TrueType to Mac TrueType).
3. Set the option to create a single master font from a multiple master (will be described later when speaking about Type 1 fonts).
4. And finally, choose to edit Macintosh FOND resource information for the suitcase by pressing the **FOND Info** button. Obviously this button is available only when converting to Macintosh platform.

For even more control of the font header information, click once on the **Advanced** triangle. The dialog will be expanded:



Font Properties Dialog box (expanded)

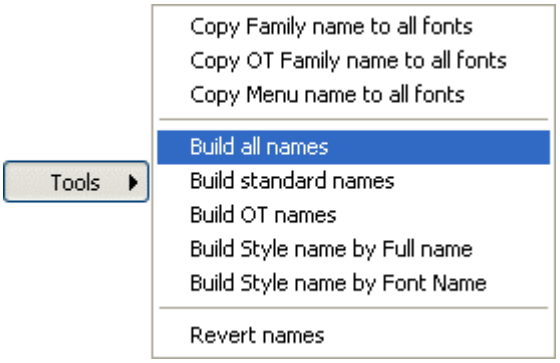
Normally you do not need to change anything in the font names but sometimes you may want to rename some fonts or rearrange a big font family containing more than 4 fonts. **If you don't know the significance and consequences of changing font names, be very careful when doing this.**

To change information for a particular font in the family, first select this font in the list.

In the expanded Properties dialog you can:

1. Change the font **Family name**. The Family name is the name of the typeface to which the font belongs. All fonts that are from the same typeface must have the same **Family Name** field. The Family Name is used as the root of the Full Name field so we recommend that you fill in this field first.
2. Change the font **Weight**. You may enter a custom value in this field or select one of the predefined weight names in the weight popup. Choose **Regular** for plain style, **Bold** for bold style, or leave this field empty if you do not care about the font weights.
3. Change style attributes represented by the **Bold** and **Italic** checkboxes and the font **Style name**. Use the button to automatically assign the proper style name. Switching the **Bold** and **Italic** attributes on and off here has the same effect as using the **Style** pop-up menu in the Destination fonts list.
4. Change the font **Full name** and **PS Font name**. PS Font name is a PostScript name that will be used by a PostScript print driver to reference the font. Do not include spaces in this name. Full name is more detailed PS Font name. It may include spaces as well as any other characters – this is the name that is exposed to users when the font is installed in Windows and sometimes in Mac OS.
5. Change the **Menu name** – the name which will appear in the font menu when this font is installed in Windows. **Note that the menu name is the name of the FOND resource on the Macintosh.**
6. Use buttons to automatically build proper names.

7. Use the **Tools** pop-up button to quickly generate all the necessary name fields on the basis of the Family name:

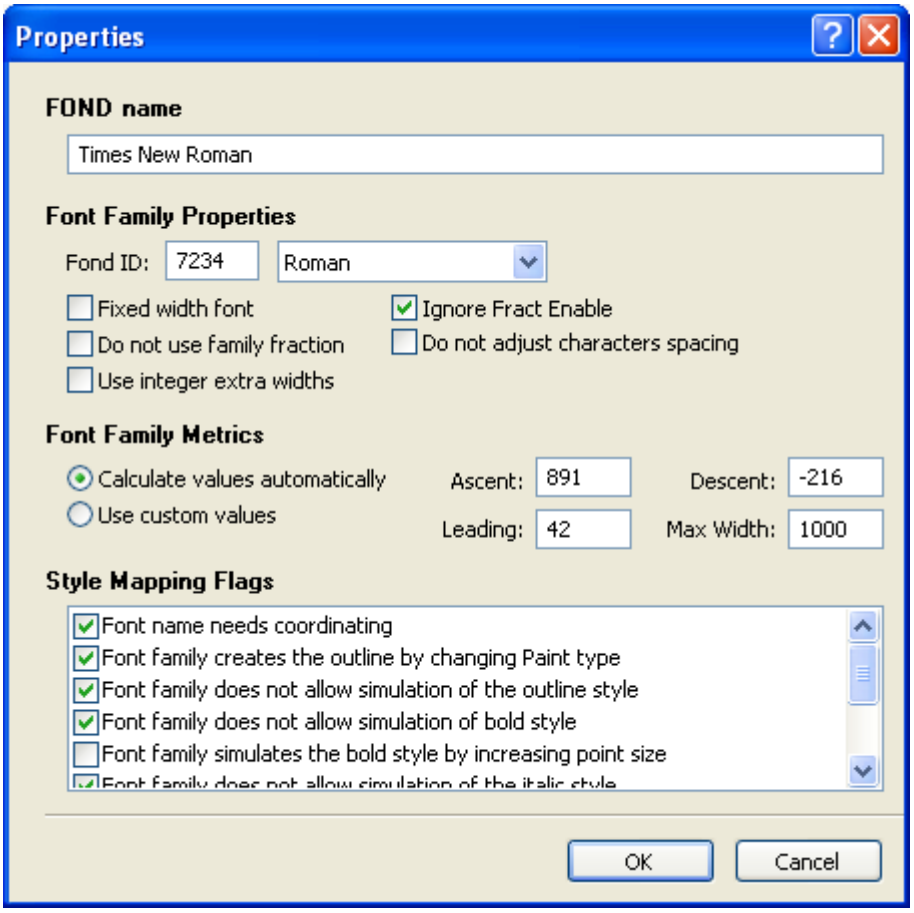

Tools
Copy Family name to all fonts
Copy OT Family name to all fonts
Copy Menu name to all fonts
Build all names
Build standard names
Build OT names
Build Style name by Full name
Build Style name by Font Name
Revert names

Using the **Tools** pop-up button with the **Shift** key pressed down affects all the fonts in the family. For example, choosing **Revert names** with **Shift** reverts all names for all fonts in the family.

***Note*:** The **OT Family name** and **OT Style name** fields are used for OpenType PS and TT fonts only**.** See the OpenType Fonts section for details.

Macintosh FOND Properties

When you press the **FOND Info** button in the Properties dialog, the **FOND Info** dialog appears in which you can change some parameters:



FOND Info Dialog box

Usually you won't need to change these parameters. But if you are a professional in font design, this dialog is for you.

Besides the FOND name, which is the same as the font menu name, you may edit parameters in the following groups.

Font family properties:

FOND ID	FOND resource identifier (or family ID number) lying in the range of the particular script. Changing the script in the pop-up menu to the right will automatically change the FOND ID and vice versa. When you change the destination codepage, the script and therefore the FOND ID change as well
Fixed width font	If this option is switched on, the font will be treated by the Macintosh system as one with characters of fixed width (monospaced). Otherwise, the font is treated as proportional
Don't use family fractional widths	If this option is switched on, the system will not use the global family widths table
Use integer extra widths	If this option is switched on, the system will use the family style extra widths table (Family Style Property Table)
Ignore FractEnable	If this option is switched on, the system will use the family style extra widths table (Family Style Property Table) even if the option **Don't use family fractional widths** is switched off
Don't adjust characters spacing	This option represents the 11^{th} bit of the family flags, which is usually set to zero

Font family metrics:

Calculate values automatically	If this radio button is checked, TransType will automatically calculate vertical metrics for the destination family. You cannot edit global family metrics manually in this case
Use custom values	If this radio button is checked, you get access to the following fields to change them. Edit family vertical metrics only if you know what you are doing and understand the purpose well
Ascent	The maximum height above the baseline reached by characters in this family fonts
Descent	The maximum depth below the baseline reached by characters in this family fonts. The depth is usually a negative number
Leading	Maximum leading for the family. The leading value is usually set to zero
MaxWidth	Maximum character width for the family

Style mapping flags (Font Class):

Font name needs coordinating	This option is switched on if the font name needs coordinating
Font family creates the outline style by changing PaintType	When this option is switched on, the **Outline** style of the family will be created by changing PaintType, a PostScript variable, to 2
Font family doesn't allow simulation of the outline style	This option is switched on if the font family disallows simulating the **Outline** style by smearing the glyph and whiting out the middle
Font family doesn't allow simulation of the bold style	This option is switched on if the font family disallows simulating the **Bold** style by smearing the glyphs
Font family simulates the bold style by increasing point size	This option is switched on if the font family simulates the **Bold** style by increasing the point size
Font family doesn't allow simulation of the italic style	This option is switched on if the font family disallows simulating the **Italic** style
Font family doesn't allow simulation of the condensed style	This option is switched on if the font family disallows automatic simulation of the style **Condensed**
Font family doesn't allow simulation of the extended style	This option is switched on if the font family disallows automatic simulation of the style **Extended**
Font family should have no additional intercharacter spacing	This option is switched on if the font family should have no additional spacing other than the space character

To get full information about the parameters represented in the FOND Info dialog, refer to "Inside Macintosh: Text:Font Manager".

***Note*: If you are not a professional typographer, be very careful when changing the FOND Info options.**

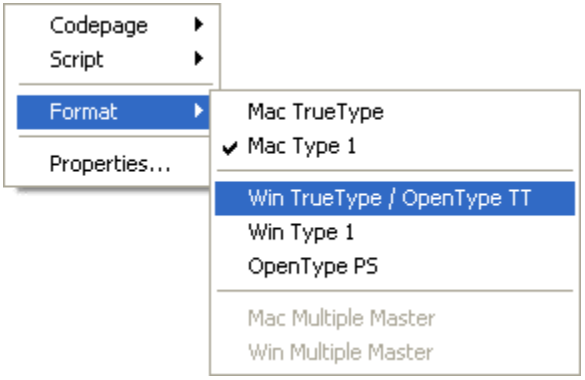
Type 1 Fonts

Conversion of PC Type 1 fonts to the Macintosh format is similar to the TrueType conversion process with the following differences:

1. The characters in Type 1 fonts are identified by names, not Unicode indexes.
2. The metrics and kerning information of Type 1 characters on the PC is located in separate metrics files (PFM or AFM).
3. There are no multiple master TrueType fonts.

Changing Font Format

By default PC Type 1 fonts will be converted to Macintosh Type 1, but you can change the destination font format. Press the pop-up menu button located at the right of the suitcase name in the Destination list to open the following pop-up menu:



Destination Format Pop-up Menu

Select the platform and the type for destination font.

✓ ***Tip***: You can change the default destination platform and format in the **Defaults/Formats Page** of the **Preferences** dialog.

Reencoding

Type 1 fonts also must be reencoded when converting from PC to Macintosh. To simplify this process and make it similar to the one used when TrueType fonts are processed, TransType automatically assigns Unicode indexes to all characters in a Type 1 font using a special table containing thousands of name-Unicode pairs. This way TransType can correctly handle Type 1 fonts that have more than 256 characters.

Note that this name->Unicode method works correctly only when characters in a Type 1 font have correct PostScript names. In cases when names are assigned incorrectly (for example, characters from a non-Latin language using Latin character names) another method is used, similar to the one that we described above when talking about the conversion of symbol-encoded TrueType fonts.

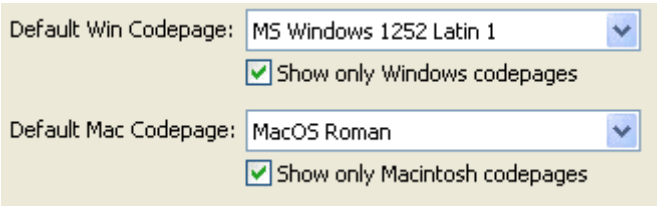
When you add a PC Type 1 font to the Source fonts list you'll see the pop-up menu button at the right of the font name. Click on it and you'll see the menu:

Use Default
✔ Use Names
MS Windows 1252 Latin 1
MS Windows 1250 Eastern European
MS Windows 1251 Cyrillic
MS Windows 1253 Greek
MS Windows 1254 Turkish
MS Windows 1255 Hebrew
MS Windows 1256 Arabic
MS Windows 1257 Baltic
MS Windows 932 Japanese
MS Windows 936 Chinese PRC
MS Windows 949 Korean
MS Windows 950 Chinese (Traditional)
MS Windows Armenian (de-facto)
MS Windows Georgian (de-facto)
MS Windows ParaGraph Cyrillic Asian
MS Windows ParaGraph Finnish-Cyrillic
MS Windows ParaGraph French-Cyrillic
MS Windows ParaGraph German-Cyrillic
MS Windows ParaGraph Greek Polytonic
MS Windows Symbol
MS Windows/DOS 1258 Vietnamese
MS Windows/OEM 874 Thai

Source Encoding Pop-up Menu

As you can see, there is a list of codepages (we discussed what this means in the TrueType section above) and two commands – **Use Default** and **Use Names**.

If you select the **Use Default** item TransType will refer to the codepage selected as the default in the **Defaults/Codepages & Scripts Page** of the **Preferences** dialog:



If you select **Use Names** (the default option for the source encoding pop-up menu) TransType will try to convert character names to Unicode indexes and later apply Unicode-based reencoding algorithms. We recommend that you always use the names-Unicode method unless you know that the source font has symbol or simulated encoding, in which case you will manually select a codepage from the codepages list. Remember that you may use the font preview feature to look at the encoding.

As in TrueType, after you define the source codepage you should select a destination codepage to completely define the reencoding process.

All the characters now have some Unicode index assigned, so you can follow the same process described in the TrueType section.

Metrics Files

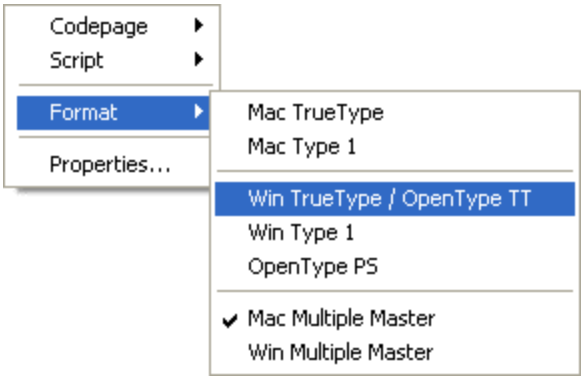
TransType uses the following sequence to create known font metrics: AFM+INF, PFM, PFB. If metrics for a particular character are not present in the PFM file, then they are extracted from the font file (PFB). After conversion the metrics information is stored in the FOND resource, as required by the Mac OS. Here is a more detailed description of the algorithm that is applied by TransType to find a metrics file:

1. It looks for the **name.AFM** file (**name** is the name of the PFB file: **name.pfb**) located in the same folder. If it locates the file, it extracts the metrics from it.
2. If the AFM file is not present, it looks for the **name.PFM** file in the same folder and, if the file is not found there, in the *PFM* subfolder of the current folder.
3. If the PFM file is found, it reads the kerning and metrics data from it. Then TransType opens the PFB file and partially interprets it to extract the metrics for the characters that are not covered by the PFM.

Multiple Master Fonts

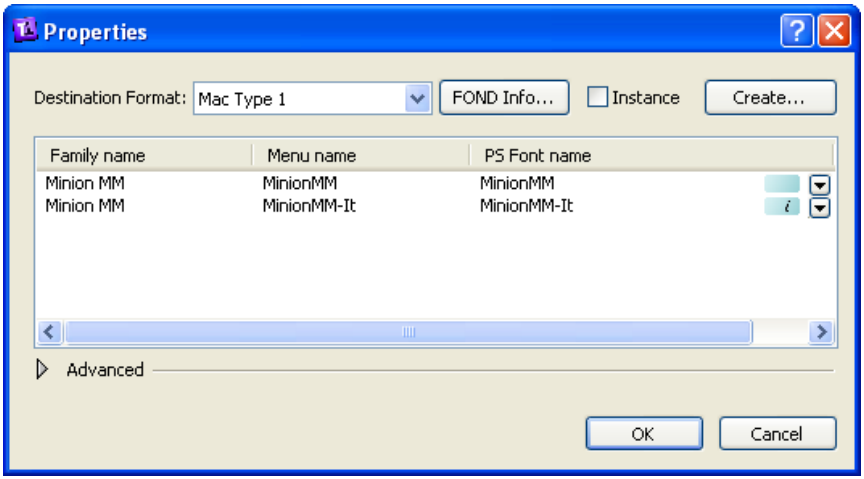
TransType can convert multiple master fonts into virtually any format or platform. After you have added a PC multiple master Type 1 font to the Source Fonts list for conversion, TransType automatically prepares to convert it to a multiple master Type 1 font for Macintosh as set in the **Defaults/Formats Page** of the **Preferences** dialog. You can see this in the Destination fonts list of the Main Window.

To change the format, press the pop-up menu button to the right of the suitcase name in the destination list and use the **Format** submenu:



Destination Format Pop-up Menu

As with other fonts in the list, you can select the **Properties** command for greater control of output formatting. The familiar Properties dialog box appears:



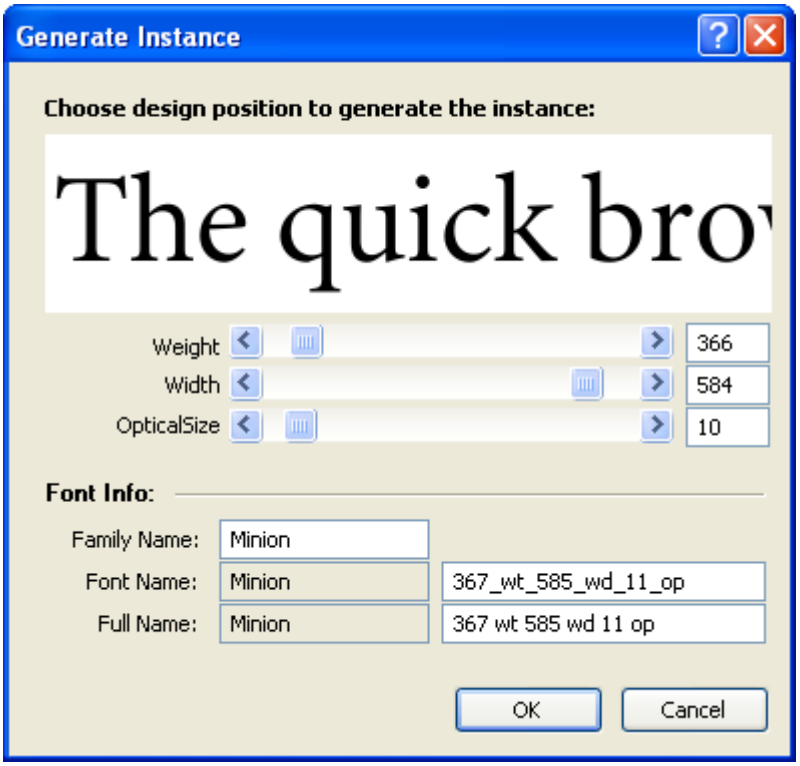
Font Properties Dialog box

You can change font style attributes and the FOND properties here in the same way as for the TrueType fonts described earlier. And one more option becomes available when a multiple master font is converted: **Create instance**. You *may check* this option if you want to create a single master Type 1 font, but you *MUST check* this option to convert to a TrueType or OpenType font. That is why, if you change the font type to TrueType or OpenType PS this option will be checked automatically.

Note: Multiple master fonts have characters with varying parameters (width, weight etc.) by their nature. If you choose some constant values for these parameters and fix them you will get an "instance" of the font that is a plain Type 1 font.

Note: You cannot alter the advanced font options for multiple master fonts but you can do this for an instance.

After the **Instance** checkbox is checked, click on the **Create** button. TransType reads the multiple master font and presents the following dialog with preview:

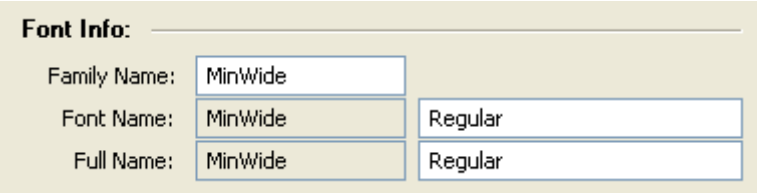


Generate Instance Dialog box

The process of creating the single master is very simple: you just select one of the instances of the multiple master font by dragging the **Weight**, **Width** and **Optical Size** sliders and previewing the result. Then you can edit the single master Family Name and automatically generated Font Name and Full Name postfixes ("367_wt_585_wd_11_op" and "367 wt 585 wd 11 op" in our example) in the editable text boxes.

As you can see it is possible to generate as many font instances as you want from one multiple master font. But this cannot be done in one step.

If you are going to generate several single master fonts from one multiple master font, you **must** then enter a unique family name for each font you're creating in the **Family Name** field. In both **Font Name** and **Full Name** postfixes always enter "Regular":



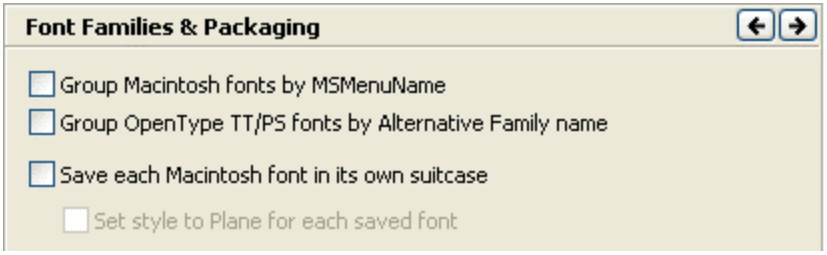
Press the **OK** button when you are finished defining the instance of the multiple master font. You can now alter the advanced font options in the Properties dialog.

Note: If you select single master Type 1, TrueType or OpenType PS format in the destination **Format** submenu and do not manually specify the instance parameters in the **Generate Instance** dialog, then TransType will produce the single master font using the default weight vector stored in the multiple master font. To create a different instance you will need to manually specify the instance parameters.

Suitcases

Suitcases containing ("referring to", if speaking more precisely) Type 1 fonts have no major differences from suitcases containing TrueType fonts ('sfnt' resources), so please refer to the TrueType section above for information about suitcase manipulations and font suitcase properties.

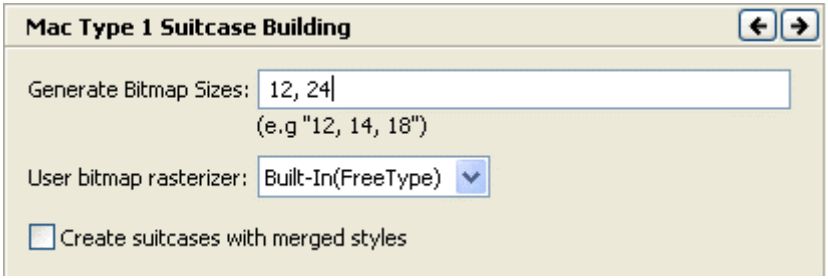
The only additional option that may be useful when converting PC Type 1 fonts is to force TransType to generate suitcases by checking and using the MSMenuName fields in the .inf files. This option, named **Group Macintosh fonts by MSMenuName,** is located on the **Font Families Packaging Page** of the **Preferences** dialog:


Font Families & Packaging
Group Macintosh fonts by MSMenuName
Group OpenType TT/PS fonts by Alternative Family name
Save each Macintosh font in its own suitcase
Set style to Plane for each saved font

Bitmap Fonts

Any Type 1 font on the Macintosh must have at least one accompanying bitmap font. TransType Pro will automatically build a bitmap font when you convert a PC Type 1 font to Macintosh format and it can do so using one of two methods:

1. FreeType rasterizer built into TransType Pro. This is the default and the only choice if you do not have ATM installed in Windows:



Mac Suitcase Building Options

2. If ATM is present we highly recommend you to select it in the **Use bitmap rasterizer** pop-up menu. It's the best way to automatically make professional-quality Macintosh Type 1 fonts that will work smoothly everywhere.

Note: PC bitmap fonts and font sets aren't converted to Macintosh bitmap fonts with TransType.

You sometimes may need to create a so-called ATR-compatible suitcase. You can do this if you switch on the **Create suitcases with merged styles** option on the **Generate Type 1/Macintosh Suitcase Page** of the **Preferences** dialog.

Macintosh to PC Conversion

Converting Macintosh fonts to PC is usually easier than vice versa for the following reasons:

1. There are no suitcases on PCs.
2. PC OpenType TT/ TrueType fonts are based on Unicode, so usually the reencoding process is simpler.
3. Bitmap fonts are not necessary for Type 1 fonts on PCs.

On the other hand, when Type 1 fonts are converted from Macintosh to PC you must generate metrics files that will be used by Windows for information about characters' widths and kerning. **And Macintosh font files must be converted to a PC readable format (MacBinary, BinHex or sit archive) before they can be converted using TransType/Win.**

Macintosh Font Preparation

Macintosh files have a significantly different structure than regular files do. In most operating systems files are a "container" for raw unstructured data. But the Mac OS uses a different approach. Generally a Mac OS file consists of two forks – data and resource. The data fork can be considered an analog of a regular file, while the resource fork contains RESOURCES. Each of these resources has a type and is supposed to be storage for some kind of data. Due to their complex structure Macintosh files cannot be copied or properly accessed from a PC. So there is a need for some intermediate format or network protocol that packs all the data into a single file or in some other way represents a Macintosh file on the PC or other platforms. Unfortunately there is no such standard format/protocol. Many network protocols are limited to accessing only the data fork of Macintosh files and that is not sufficient to read Macintosh fonts. TransType tries many different ways to access Macintosh files through a network but sometimes it just isn't possible. In this case or if you're not accessing the files over a network you will need to do a manual conversion. There are several ways of delivering your Macintosh fonts to a PC without any loss of data:

- Single file MacBinary or BinHex intermediate format
- Email attachment
- PC formatted diskette, ZIP or MO disks
- MacDrive® utility and Mac formatted disks or CDs (HFS only)
- Through some special networking utilities and some Networking Operating Systems
- Single Macintosh StuffIt archive

Single file MacBinary or BinHex intermediate format

The simplest way to deliver a Macintosh file to a PC is to convert it into a MacBinary or BinHex file. These formats were developed for transferring Macintosh files through a heterogeneous network environment. When a Macintosh file is being converted into one of these intermediate formats all its data and resource forks are stored into a single file along with other Mac OS related information. When it is converted back its data and resources are restored as they were originally created on the Macintosh. The difference between MacBinary and BinHex is that BinHex was designed to transfer files in the body of a text message and therefore contains only alphabetic characters. MacBinary files are meant to be a way for treating Macintosh files as regular files. Despite their similarity MacBinary files are considerably smaller due to their binary nature.

Note: You must convert the font files on a Macintosh before copying them to a PC.

Converters for the creation of MacBinary and BinHex files on Macintosh can be freely downloaded at:

ftp://ftp.stairways.com/other/macbinary-3.sit.hqx
http://hyperarchive.lcs.mit.edu/HyperArchive/Archive/cmp/binhex-50.hqx

or you can use commercial utilities such as StuffIt Deluxe™.

After conversion you will have a regular file that contains all the necessary data and can be copied or sent in the usual manner through the network, on diskette or any other media. Just drag-and-drop these files (in MacBinary and BinHex format) into TransType or **Add** them.

E-mail with attached font(s)

TransType can accept fonts delivered to your PC from remote Macintosh by e-mail. Fonts are attached to the message on Macintosh in the usual way. After the message is received you must save it to disk as a “mail message” (with a .eml extension) and then add this file to the TransType Source list.

PC formatted diskette, ZIP or MO disks

Another relatively easy way of getting font files to a PC is to copy them onto a PC formatted diskette, ZIP or MO disk. A PC formatted disk is a disk that was formatted for a PC and thus contains a PC disk structure. When copying files on such a disk the Mac OS stores them using a special protocol called "PC Exchange". After you have copied files to such disk, TransType is able to read them directly from the media. Note that files might be “zero size”. This is just because their resource fork is stored elsewhere (e.g. in other directory). TransType will locate all the necessary data automatically.

MacDrive® utility and Mac formatted disks or CDs

MacDrive® is a third party utility that was developed to enable the PC to read disks that were originally formatted on a Macintosh (and thus have the Mac OS file system). Visit http://www.macdrive.com for details. TransType automatically uses the functionality of MacDrive if it is installed thus enabling it to read Macintosh files from any media supported by MacDrive. This is the only way for TransType to read fonts directly from Macintosh disks. Note that Windows may report the size of Macintosh fonts to be zero. Nevertheless TransType will be able to read them. Note that MacDrive supports only Macintosh HFS CDs.

Through a network from a WinNT/2000/XP workstation

Windows NT/Windows 2000/Windows XP has the ability to store Macintosh files on its NTFS partition. Unfortunately these services are unavailable under Windows 95/98/ME. So if you are running Windows NT, XP or 2000 TransType can directly read Macintosh files located on any local or network NTFS drives. This could be the most convenient way if you need to convert files often. Note that as in the previous case files can be reported to be zero size but that doesn't mean that they are actually empty.

Through special networking utilities and some Networking Operating Systems

TransType supports a number of different networking protocols that can see Macintosh files through the network. The supported protocols are:

- AppleDouble
- Netatalk
- AUFS CAP
- Helios EtherShare
- PC Exchange
- SGI
- DAVE
- AppleSingle
- NTFS Services for Macintosh

Note: Exchange through some of these protocols may not work depending on version, configuration and other conditions. The best way of checking the availability of such a protocol is to try adding some Macintosh fonts to TransType through your network.

Single Macintosh StuffIt archive

If Macintosh fonts were packed with StuffIt Deluxe, you can just copy the .sit archive to your PC hard disk and add it to the TransType Source list.

TrueType Fonts

When you add a Macintosh font suitcase containing TrueType fonts ('sfnt' resources) to the Source list, you must let TransType know which codepage it uses. The only case when this is not necessary is when the source Macintosh TrueType font has a Unicode table (usually the case).

To select a codepage for the source TrueType font follow the rules that were described when we talked about converting PC TrueType fonts to Macintosh format.

After TransType knows for which codepage a TrueType font was encoded, it can assign Unicode indexes to the font's characters and generate a correct Unicode-mapped font, as Windows requires.

Note that the accompanying bitmap fonts (if any) from the same Macintosh suitcase are not copied or converted to PC font format.

See also the TrueType<->Type 1 Conversion section for information on different TrueType creation options.

Type 1 Fonts

Conversion of Type 1 fonts from Macintosh to PC is very similar to the conversion from PC to Macintosh. The only difference is the handling of the metrics. Metrics information (a character's width(s) and kerning) is extracted from the font suitcase and converted to AFM, INF and PFM files. Of course, the reencoding information is used when the metrics files are generated so that you get a valid PC Type 1 font file.

Note that the accompanying bitmap fonts from the Macintosh suitcase are not copied or converted to PC font format as in the case with TrueType fonts. **But you must always add suitcases to TransType but not printer font files only.**

See also the TrueType<->Type 1 Conversion section for information on different Type 1 creation options.

TrueType<->Type 1 Conversion

By default TransType converts between platforms but not between formats (TrueType to TrueType and Type 1 to Type 1). You have the option to change the destination font type in the destination **Format** pop-up menu or in the font **Properties** dialog box.

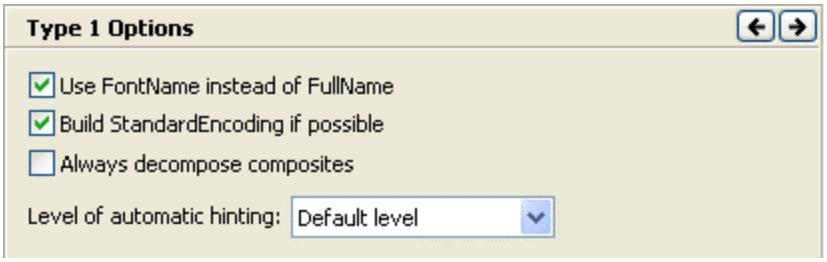
Before you change the destination font type (and actually before adding fonts to the Main Window), it is a good idea to check some of the more important options for generating fonts in the destination format.

Note: If you change any of the options in the **Preferences** dialog, you have to re-add the fonts to the source fonts list in order to convert them according to the "new rules".

Type 1 Options

To check and set parameters for generating Type 1 fonts, click the **Preferences** button at the bottom of the Main Window and refer to the **Generate Type 1** section of the **Preferences** dialog.

General Type 1 Options



Generate Type 1 Page of the Preferences Dialog

There are only four controls on the **Generate Type 1** page:

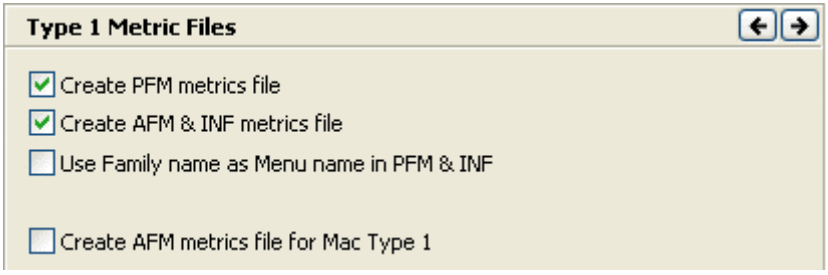
Use FontName instead of FullName	If this option is checked, TransType will name the files of Type 1 fonts on the basis of FontName. If this option is off, TransType will name the files on the basis of FullName. In some cases this affects the font menu name too. We recommend that you keep this option switched on
Build Standard Encoding if possible	If this option is checked, TransType will try to replace the encoding information in the font with a reference to the Adobe Standard Encoding vector. This replacement is possible only if the destination font conforms to the Adobe standard encoding table. This option is off by default
Always decompose composites	If this option is checked, TransType will decompose all composite characters imported from the source font and write them decomposed to the destination font. This option is off by default

The **Level of automatic hinting** pop-up menu allows you to control Type 1 hinting. Autohinting is not needed when conversion from Type 1 format is performed. All old hinting information is preserved in this case. But when conversion from TrueType is performed, the are two ways to deal with hints:

1. To not generate hinting information in a new Type 1 font: Select **No Hinting** in the **Level of autohinting** pop-up menu. The font will loose quality in this case.
2. To use the special autohinting algorithms that convert TrueType instructions into Type 1 hints: Select **Default Level** item in the **Level of autohinting** pop-up menu. This option is set by default.

Metrics Options

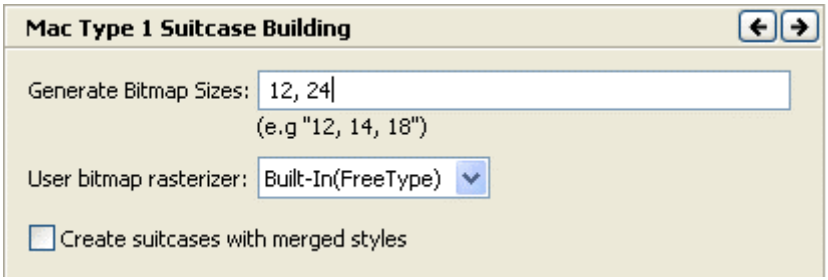
Refer to the **Generate Type 1/Metrics Page** of the **Preferences** dialog:


Type 1 Metric Files
Create PFM metrics file
Create AFM & INF metrics file
Use Family name as Menu name in PFM & INF
Create AFM metrics file for Mac Type 1

Generate Type 1/Metrics Page of the Preferences Dialog

Create PFM metrics (Windows only)	If this option is checked, TransType will save metrics in a PFM file when converting for Windows. This option is on by default
Create AFM & INF metrics (Windows only)	If this option is checked, TransType will create AFM and INF files when creating Type 1 for Windows. This option is on by default
Create AFM metrics for Macintosh Type 1	If this option is checked, TransType will create a separate AFM metrics file for Macintosh Type 1. This option is off and metrics are saved to the main PostScript font file by default
Use Family name as Menu name in PFM and INF	If this option is checked, TransType will write the font Family name to the Menu name fields in PFM and INF files. It is off by default

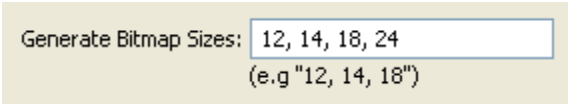
Macintosh Suitcase Options



Generate Type 1/Macintosh Suitcase Page of the Preferences Dialog

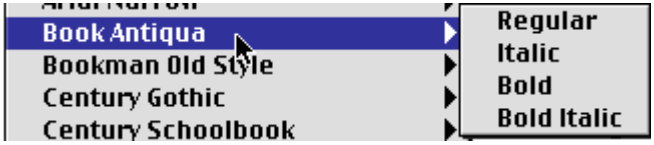
The options on this page are useful when creating Type 1 fonts for Macintosh. TransType can automatically generate bitmap fonts with one of two rasterizers. Choose between the built-in FreeType rasterizer or Adobe Type Manager™ (ATM) if installed.

You can request several sizes of bitmap fonts:



Enter the point sizes of the bitmaps you want to export with the Mac Type 1 font, separating values by a space or comma.

If the **Create suitcases with merged style**s option is checked, TransType will generate a font suitcase compatible with Adobe Type Reunion™, which lets the font's styles appear in the hierarchical menu of the font menu like that:

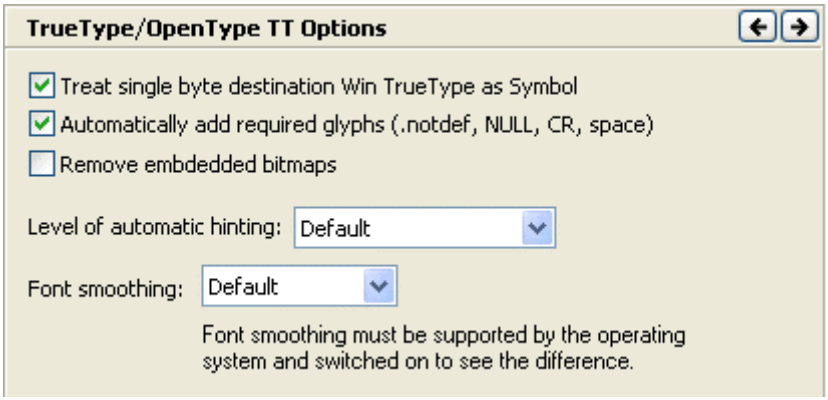


This option is off by default.

TrueType Options

To check and set parameters for generating TrueType fonts, click the **Preferences** button at the bottom of the Main Window and refer to **TrueType/OpenType** section of the **Preferences** dialog.

General TrueType/OpenType TT Options


TrueType/OpenType TT Options
Treat single byte destination Win TrueType as Symbol
Automatically add required glyphs (.notdef, NULL, CR, space)
Remove embdedded bitmaps
Level of automatic hinting:
Default
Font smoothing:
Default
Font smoothing must be supported by the operating system and switched on to see the difference.

Generate TrueType/OpenType Page of the Preferences Dialog

Here is the description of controls which are used to customize the TrueType font (Win OpenType TT/TrueType and Mac TrueType) generating process:

Treat single byte destination Win TrueType as Symbol	If this option is checked, TransType will generate a non-Unicode Windows TrueType font as a Symbol font. All characters in this font will be mapped to the F000-F0FF range. This option is on by default
Automatically add required glyphs	If this option is checked, TransType will add some predefined glyphs in a TrueType font automatically. These are the “missing” character and the “space” for Windows TrueType, and the “missing” (“default”), “null”, “space”, “CR”, and sometimes “non-breaking space“ for Macintosh TrueType. This option is on by default
Remove embedded bitmaps	If this option is not checked, TransType will try to preserve and reencode bitmaps embedded into a TrueType font. TransType can reencode embedded bitmaps only with our old TransType 1.x conversion method (see the description of the General Conversion Options). This option is on and embedded bitmap fonts are stripped by default.

When conversion of a Type 1 or OpenType PS font into TrueType format is performed, Type 1 hints must be converted into TrueType instructions. This conversion can be done by two methods: **Default** and **Advanced**.

The Default method is commonly used and always produces good results. The Advanced method is sometimes better than the default method as it can produce delta hints. Select the method of TrueType hints creation in the **Level of automatic hinting** pop-up menu. If **No hinting** item is selected, there will be no hints in the destination TrueType font.

Note: TrueType hinting options will be ignored when conversion of TrueType to TrueType is performed.

Font smoothing is a special technique for improving the appearance of TrueType fonts on the screen. Font smoothing is used by the latest versions of the Windows operating system. With this technique edges of the characters are rendered using shades of gray. Font smoothing may be combined with a gridfitting method that optimizes the character's appearance by adjusting its outline. The **Font smoothing** pop-up menu lets you control the usage of these methods:

1. Choose the **Default** option to apply smoothing and gridfitting methods in accordance with the following table:

Font size in screen pixels	Methods
0-8	Smoothing
9-16	Gridfitting
17-...	Both smoothing and gridfitting

   These are the usual optimal settings for font smoothing.

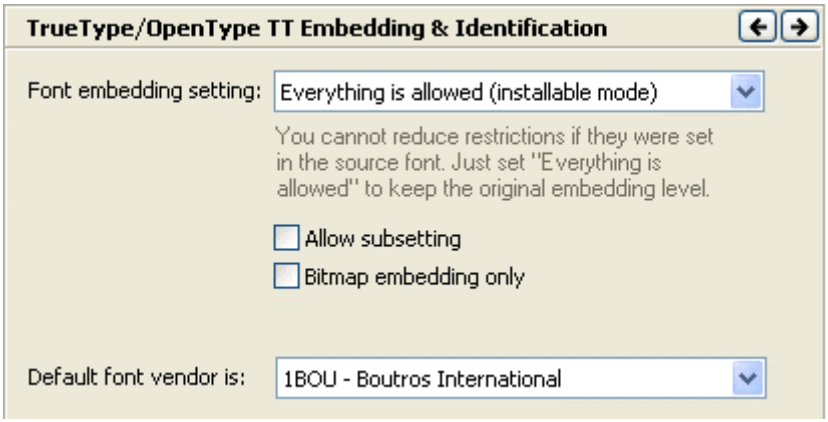
2. Choose the **Off** menu item to not generate the smoothing table in the destination TrueType fonts.

3. Choose the **Always** menu item to apply both smoothing and gridfitting methods to all sizes of the font on the screen:

Font size in screen pixels	Methods
0-...	Both smoothing and gridfitting

Note: Font smoothing table data make sense only on the Windows platform as they are ignored by the Mac OS.

Embedding And Identification Options


TrueType/OpenType TT Embedding & Identification
Font embedding setting:
Everything is allowed (installable mode)
You cannot reduce restrictions if they were set in the source font. Just set "Everything is allowed" to keep the original embedding level.
Allow subsetting
Bitmap embedding only
Default font vendor is:
1BOU - Boutros International

Generate TrueType/OpenType/Embedding & Identification Page of the Preferences Dialog

The **Embedding & Identification Page** contains two additional pop-up menus and two checkboxes.

The **Font's embedding** pop-up controls how the font may be embedded into documents. Embedding is a feature of the operating system and some applications that allow programs to include fonts into documents to guarantee that they will be reproduced correctly. However, embedding may cause problems with font piracy. It is not very hard to extract embedded fonts from a document, so the TrueType font format includes a special setting that can control font embedding.

There are four types of font embedding:

Only printing and previewing is allowed	The font may be embedded, but editing of the document it contains is not allowed. This selection is set by default
Editing of the document is allowed	The font may be embedded and the document that contains the font may be viewed, printed and edited
Everything is allowed	After the document is opened the font works as if it was installed in the system
Embedding is not allowed	Embedding is not allowed for this font.

You cannot reduce or remove the embedding restrictions that were set in the source font by the original creator of the font. You can either leave the embedding restrictions unchanged or set the restrictions higher. For example, if the original font has the embedding level **Editing of the document is allowed** and you change the level to **Everything is allowed** in the Preferences dialog, then in the output font the original embedding level will be retained rather than the one you set. But if you change the embedding level to **Not allowed,** then the embedding in the output font will be changed.

Additionally you can use the **Allow subsetting** and the **Bitmap embedding only** options for more control of the embedding fonts into documents.

The **Default font's vendor** pop-up allows you to set the special up-to-four letter length code that is assigned to most TrueType producers to identify their fonts. An *uppercase* vendor code must be registered with Microsoft or Apple. All registered Vendor codes known at the time of TransType's release are placed in the pop-up menu. You don't need to change the default 'PYRS' vendor code if you do not have your own.

OpenType Fonts

Among the new features of TransType Pro is the support for the OpenType font format. The OpenType font format, jointly developed by Microsoft and Adobe, allows us to combine the best features of the TrueType and Type 1 font formats.

For the end user there is little difference between OpenType and TrueType fonts: both are stored in a single font file, both are Unicode-encoded and Windows and Mac OS directly support both.

From the inside, there are two possible forms of OpenType fonts: so-called OpenType TT (or TrueType-flavored) and OpenType PS (or PostScript-flavored).

The general structure of the font file is the same and both versions of the format provide the same functionality. But there are some technical differences:

Version	OpenType TT	OpenType PS
Outlines	2nd-order, like in TrueType fonts	3rd-order, like in Type 1 fonts
Hinting	TrueType instructions	Type 1 declarative hints
File extension	TTF	OTF
Comments	Basically any TrueType font may be called an OpenType TT font, but usually we call them OpenType fonts only when they have special features.	Outline data is stored in CFF (Compact Font Format) format that is expected to work better with PostScript devices.

OpenType Features

OpenType fonts consist of multiple tables. Every table is identified by a tag, which is a combination of up to 4 characters.

3 tables are “responsible” for the OpenType features:

GDEF	Glyph definition table. Contains information about font glyphs, including their type (simple, mark or ligature), cursive-attachment points and position of the caret inside the ligature character.
GSUB	Glyph substitution features
GPOS	Glyph positioning features

Other tables may exist in OpenType fonts, for example the BASE table that defines different baseline positions for non-Roman scripts, but TransType Pro doesn't work with these tables.

Information about OpenType features is stored in a binary form inside the font file. When TransType opens an OpenType font file that contains features it tries to reconstruct the feature-definition file.

Please note that the presence of any one of these tables makes a TrueType font an OpenType TT font.

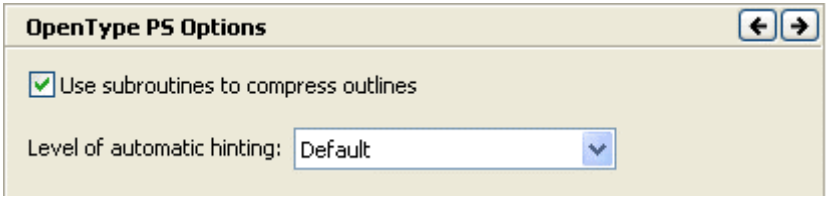
Converting OpenType Fonts

Conversion of OpenType TT and OpenType PS fonts to the traditional Type 1 and TrueType formats is of no interest because this will just strip out all additional OpenType-specific information from the font. This is possible but not a very useful operation. The more useful types of conversion are as follows:

1. Conversion of OpenType TT fonts to OpenType PS fonts and vice versa. This can be called "changing the font flavor".
2. Conversion of traditional Type 1 and TrueType fonts to OpenType fonts.

OpenType PS Options

To check and set parameters for generating OpenType fonts, click the **Preferences** button at the bottom of the Main Window and refer to the **Generate OpenType PS Page** of the **Preferences** dialog:



Generate OpenType PS Page of the Preferences Dialog

There are only two controls in the dialog which are used to customize the OpenType font generating process.

The glyph outlines in OpenType PS fonts can be compressed. If the **Use subroutines to compress outlines** option is checked, TransType Pro will perform this compression. This option is on by default.

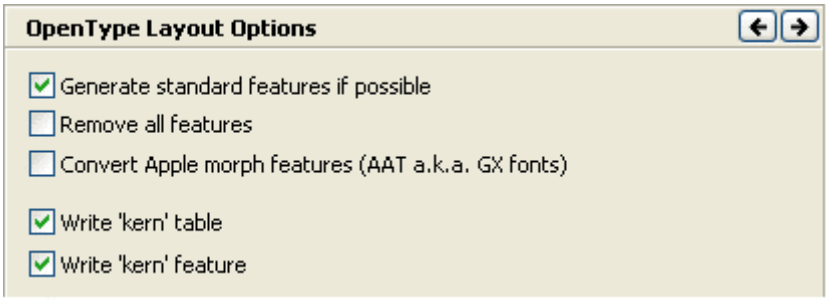
The **Level of automatic hinting** pop-up menu is used when an OpenType PS font is generated. Autohinting is not needed when conversion from Type 1 format is performed. All old hinting information is preserved in this case. But when conversion from TrueType is performed, there are two ways to deal with hints:

1. To not generate hinting information in a new OpenType PS font: Select **No Hinting** in the **Level of autohinting** pop-up menu. The font will be unhinted in this case.
2. To use special autohinting algorithms that convert TrueType instructions into Type 1 hints: Select **Default Level** item in the **Level of automatic hinting** pop-up menu. This option is set by default.

Note: TrueType hinting options (the **Generate TrueType/OpenType Page** of the **Preferences** dialog) will be used when conversion of a Type 1 font to OpenType TT (ttf) font is performed.

When producing OpenType fonts you also should check other options like **Perform optimal conversion method if possible** in the General Conversion Options, or **Group OpenType TT/PS fonts by Alternative Family name** in Font Families Packaging.

OpenType Layout Options


OpenType Layout Options
Generate standard features if possible
Remove all features
Convert Apple morph features (AAT a.k.a. GX fonts)
Write 'kern' table
Write 'kern' feature

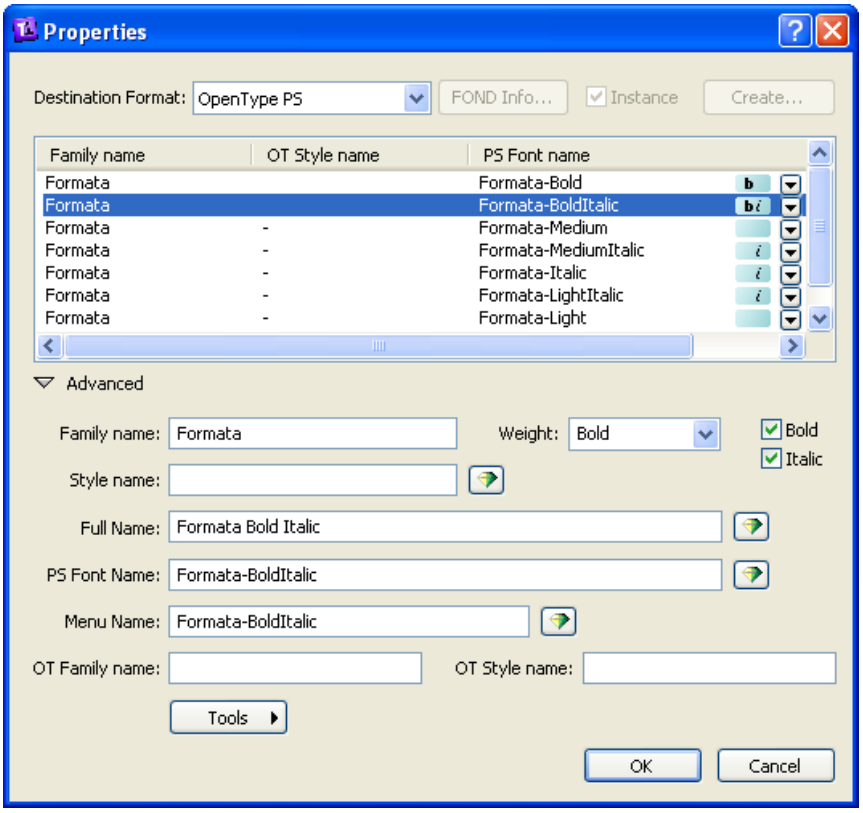
OpenType Layout Page of the Preferences Dialog

These options are used to customize the OpenType font features generating process:

Remove all features	If this option is checked, all features of the source OpenType font will be ignored. This may be useful when one wants to convert OpenType TT font to the traditional TrueType font. This option is off by default. It is ignored if the **Perform optimal conversion method if possible** option is on
Add standard features if possible	If this option is checked, autogeneration of basic OpenType features is possible. TransType Pro automatically generates “liga”, “ccmp”, “frac”, “kern”, and “ordn” OpenType features if glyphs that can be used in these features are present in the font. This feature works on converting of Latin fonts only to both TT and PS OpenType formats. This option is ignored if the **Perform optimal conversion method if possible** option is on
Convert Apple morph features to OT features	This option lets you control the conversion of special metamorphosis tables in AAT fonts to OpenType features. If this option is checked, TransType Pro will try to convert those tables to the following supported OpenType features: rlig, liga, dlig, hlig, alig, isol, smcp, vrt2, vkna, tnum, sups, subs, frac, zero, ornm, trad, tnam, smpl, jp78, jp83, jp90, onum, pwid, hwid, fwid, ccmp. **Note that not all AAT features can be converted**
Write 'kern' table	If this option is checked, TransType Pro will write the plain kerning table when generating an OpenType font. This option is normally on
Write 'kern' feature	If this option is checked, TransType Pro will generate and write the 'kern' OpenType feature. This option is on by default.

OpenType Properties

You can edit some OpenType font properties when you convert to OpenType PS format. Press on the pop-up button at the right of the suitcase name in the destination font list and select the **Properties** command in the pop-up menu or just double-click the suitcase icon or name. The familiar **Properties** dialog appears:



This dialog was described earlier when we spoke about TrueType fonts and suitcases. Here we add some information regarding OpenType fonts.

The **OT Family name** field allows you to define an additional (alternative) font family name. This name can be used to create a family containing more than 4 fonts. You must use the same OT Family name in all fonts that you want to put into a “big” family and make the OT Style name different for each of these fonts. The fonts with one OT Family name may belong to different traditional small families and have therefore **different Family names**.

Here is an example of "big" OpenType family naming:

OT Family Name	OT Style name	Family name & Menu name	Style name	Style	Weight
MyGaram	Light	MyGaram Lt	Regular		Light
MyGaram	Light Italic	MyGaram Lt	Italic	*i*	Light
MyGaram	Regular	MyGaram Rg	Regular		Regular
MyGaram	Italic	MyGaram Rg	Italic	*i*	Regular
MyGaram	Semibold	MyGaram Lt	Bold	**b**	Semibold
MyGaram	Semibold Italic	MyGaram Lt	Bold Italic	**b***i*	Semibold
MyGaram	Bold	MyGaram Rg	Bold	**b**	Bold
MyGaram	Bold Italic	MyGaram Rg	Bold Italic	**b***i*	Bold
MyGaram	Condensed	MyGaram Cn	Regular		Regular
MyGaram	Condensed Italic	MyGaram Cn	Italic	*i*	Regular

Do not forget to check the **Group OpenType TT/PS fonts by Alternative Family name** option on the **Font Families Packaging Page** of the Preferences dialog.

The OT Family name appears in the font menu as the “font name”. Please note that this information is used only by new applications that can handle OpenType fonts. Adobe InDesign or other new Adobe programs are good examples.

For more information on OpenType fonts refer to the OpenType format specification:

http://www.microsoft.com/typography/otspec/default.htm

The Output Panel

When OpenType features are compiled the special **Output** panel may occur. The Output panel is used to inform users about problems and may contain error and warning messages.

The Output panel is also used for text output with the Python print operation.

FontLab (VFB) Font Conversion

TransType can convert fonts from the VFB format used internally in other FontLab products. They can be converted to any format for any platform. There are, however, a few caveats:

1. Converting a VFB font in TransType is the same as exporting it from a Fontlab application, only with the additional power that you can choose the encoding.
2. When you add a single master VFB font to the source list of the Main Window, TransType prepares to convert it to a Macintosh TrueType font by default. You can change the destination format using the **Format** submenu as with other fonts.
3. When you add a multiple master VFB font to the source list of the Main Window, TransType prepares to convert it to a Macintosh Type 1 multiple master font by default. For details please see the section on multiple master fonts conversion.
4. As with other conversions you can use the different TrueType and Type 1 creation options described in the TrueType<->Type 1 Conversion section. Please note that the option "**Perform conversion with minimal changes**" doesn't work with VFB files.

TrueType Font Collection (TTC) Conversion

TransType Pro can open fonts in the TrueType font collection (TTC) format used on PC. The TTC file is actually a set of TrueType fonts in one file. Each font in a collection usually has its own family name and can be converted to virtually any format supported by TransType Pro.

When you add a TTC file to the Source fonts list in TransType Pro you get its name in the list:

You can see the font collection file , which contains PC TrueType fonts. Click or Option-click on the triangle to the left to open the collection and see its contents:

Fonts in a TrueType font collection can be converted as usual PC TrueType fonts with one significant exception: we do not recommend that you convert them to Macintosh suitcase based formats, i.e. Mac TrueType and Type 1 fonts. Because the TrueType fonts in a collection are usually very big the resulting Mac resources may exceed their maximum size and become unusable.

Other Types of Conversion

By default TransType converts between platforms in one format (PC TrueType to Mac TrueType etc.). This is set on the **Defaults/Formats Page** of the **Preferences** dialog and can be changed. You have also the option to change the destination platform and format in the destination **Format** pop-up menu or in the **Font Properties** dialog and convert, for instance, Win TrueType/OpenType TT to Win TrueType/OpenType TT or Mac Type 1 to Mac Type 1.

Why would you want to do this?

1. To change a font's encoding.
2. To decompose composites in a font.
3. To compact fonts by removing extra glyphs, etc.
4. To remove OpenType font features from a font.

Note: Not all the options from the **Generate Type 1** and **Generate TrueType** sections of the **Preferences** dialog work when conversion within one format is performed. For example, hinting options never work in such cases.

Python Programming

One of the unique features of TransType Pro is an integrated macro programming language. With this feature you can program repeated tasks, define custom font transformations, and integrate TransType Pro into a font development system that may include other tools.

Macro programs in TransType Pro are written in the well-known and well-documented Python programming language. In addition to support of Python TransType Pro provides a set of classes and variables that open all the TransType Pro data structures to the programming interface.

Please note that this chapter covers only the very basic features of TransType Pro macro programming. We will be providing more information, specifications and sample programs on our web site (www.fontlab.com).

The Python Programming Language

Python is a very high level object-oriented programming language. It combines a very clear and easy-to-understand syntax with great power, flexibility and extensibility.

Python works on all known platforms and is intensively maintained and updated by many professionals around the world.

It is not surprising that during the last few years Python has become a de-facto standard for macro programming related to fonts. TransType Pro continues this trend and extends it to a new level – providing full integration of macro programming tools with its user interface.

More information about Python programming, manuals and samples are available on the official site:

http://www.python.org

which we recommend highly if you are not already familiar with the language. We will provide minimal instruction in Python programming in this chapter as that is better obtained elsewhere. We will assume that if you plan to write TransType Pro macro programs that you have read the Python tutorials and have some experience in Python programming.

Installing Python

When you run TransType Pro for the first time it will know nothing about macro programming and Python. The Macro pop-up menu is disabled. This means that if you don't want to use this feature you are not required to and TransType Pro will work smoothly without any Python integration.

If you want to use macro programs or perhaps create some programs yourself, however, you have to install the Python interpreter.

FontLab can work with the Python interpreter starting from version 2.2.1. Versions 2.3 and 2.4 are recommended.

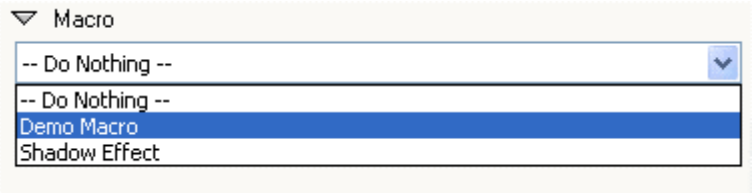
First, download it from the FontLab site:
http://www.fontlab.com/html/fontlab.html

or from the Python site:
http://python.org/ftp/python/2.2.3/Python-2.2.3.exe

After you download this file, run it and follow the instructions to install Python.

Macro Pop-up Menu

After you have properly installed the Python interpreter and restarted TransType Pro you will see the **Macro** pop-up menu is enabled below the Legend field in the Main Window:



By default "Do nothing" is selected in the menu and TransType Pro doesn't load and perform any macro program during the font conversion process.

You can integrate macro programs (written yourself or downloaded from the Internet) into the Macro pop-up menu in TransType Pro. Integration of macro programs into the menu is done automatically if macro programs are stored in the *Program Files/FontLab/TransType Pro/Macros/System/Tool/* or *My Documents/FontLab/TransType Pro/Macros/System/Tool/* folder. Note that Python macro programs must have a ".py" extension to be accepted by TransType Pro.

Writing Programs

If you feel ready to create your first macro program you can start by opening a text-editing application. TransType Pro doesn't have its own macro editing interface so you must use a text editor like WordPad or Notepad.

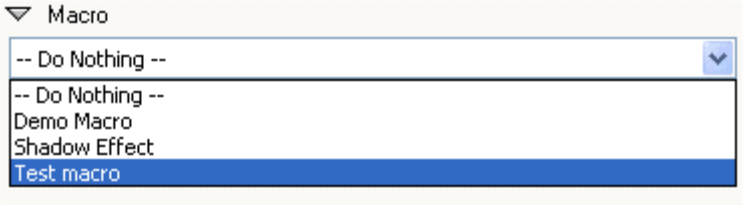
First Steps

Let's write a basic program. The "Hello World!" program is a typical benchmark of the simplest useful program you can write. It is very easy to do in TransType Pro/Python:

1. Open the text-editing program and create a new document.
2. Enter the following code:

```
#FLM: Test macro
from FL import *
def tr_init():
    print "Hello World!"
    return 0
```

3. Save the document as "testing.py" in the *Program Files/FontLab/TransType Pro/Macros/System/Tool* folder in text-only format.
4. Launch TransType Pro and add a font for conversion to the Source list. You will see the Macro pop-up menu now contains your program "Test macro":



5. Convert the font as usual. The **Output** panel will open with the text "Hello World!" printed:

All text you output with the Python print operation appears in the **Output** panel.

OK, now you can try more complex macro programs like "Demo Macro" included with TransType Pro.

Naming the Programs

When you are saving a program and want it to be used in the Macro pop-up menu you need to name it. There are two ways to name a program: you can store the name in the file name (followed by the ".py" extension) or you can embed the name into the program code. The latter way is recommended – it allows you to keep the filename small but descriptive.

To name a program put the following line at the very beginning of the program:

#FLM: <program name>

where the <program name> is the name of the program, as in the following example:

#FLM: Shadow Effect

Note that there is exactly one single space between #FLM: and the name.

The Programs Structure

The next required string following the program name is:

```
from FL import *
```

This string is mandatory and should be included in every macro used with TransType Pro.

The remaining part of the program has the following structure:

```
<...>
def tr_init():
    <...>
    return 0
def tr_process(font):
    <...>
    return 0
def tr_done():
    <...>
    return 0
```

The **tr_init** procedure is called every time you press the **Convert** button that is once before the first font will be converted.

The **tr_ process(font)** procedure is called before the current font **font** is converted and saved in the chosen format. Therefore this procedure is executed as many times as many fonts you have in the Destination fonts list. Normally this procedure should return zero value; but if it returns **1** the font will not be saved; and if it returns **2** the font will not be reencoded. The value of **-1** will terminate the whole conversion process.

And finally, the **tr_done** procedure is called once after all fonts are converted and saved.

Please open our *demo.py* program in any text-editing application and consider it as an example.

TransType Pro Python Classes

TransType Pro is based on the FontLab 4 Python API. The highest class in the FontLab hierarchy is a class named FontLab. You cannot create it explicitly, but the object of this class is always available and is named “fl”. The most important member of this class is “font” – the current font as a Font object. The Font class contains all the data that is related to the font in TransType Pro internal data structures.

If you need more information about classes please refer to the FontLab User Manual available at http://www.fontlab.com/html/fontlab.html but note that the TransType Pro Python API has some limitations in comparison with FontLab 4.

The full specification will be available as a separate document for download from our site (http://www.fontlab.com/html/python.html).

Technical Details

Here we'll add some technical details for professional TransType users. With the information contained here you can customize some of TransType's features and better understand how it works.

Type 1 Fonts

TransType opens every Type 1 font being converted and partially interprets it to extract the names of all the characters present in the font and the information about the characters' widths. Note that information about the characters' bounding boxes is not extracted, so when Macintosh fonts are converted to PC and an AFM file is generated, the font bounding box is used instead of character bounding boxes.

Information about the mapping of PostScript names of characters to Unicode indexes is located in the Standard.nam file located in the *Program Files/Common Files/FontLab/Mapping* folder. This file has a very simple structure – every line contains a PostScript name and its corresponding Unicode index. You can edit this file or extend it at your own risk.

In addition to the Standard.nam file TransType uses an algorithm that decodes names constructed according to Adobe's "uniXXXX" rule.

TrueType Fonts

When TransType opens PC TrueType fonts it looks for a (3.1) CMap table. If this table is found then the font is marked as a normal Unicode font. If not, TransType tries to open the (3.0) table – if this table is present, it means that the source font is a symbol font.

The last table that is checked is the (1.0) table usually used to encode fonts on the Macintosh. This table is also used as a symbol-mapping table. If the font contains more glyphs than are covered by the (1.0) CMap table, TransType tries to open the post table, extract the glyph names and find Unicode indexes using the same method which is used when PostScript names of the Type 1 characters are mapped to Unicode.

Note that the same search sequence is used when a font is converted from Macintosh to PC.

The MacStyle field of the head table is used to detect the style of a Windows TrueType font.

AAT (Apple Advanced Typography) features **are not created** when converting to Macintosh TrueType.

Ascender and descender values are extracted from the head table. The OS/2 table is not used for these purposes.

Customizing Codepages

Files containing definitions of the codepages that appear in the pop-up menus are in the *Program Files/Common Files/FontLab/Codepage* directory and have a simple text structure. You can edit the existing files and make your own codepages following the structure of any existing file. You may put the edited codepages in the *Program Files/Common Files/TransType Pro/Codepage/* directory or in the *My Documents/FontLab/TransType Pro/Codepage* directory.

Note that only a limited number of codepages appear in the lists by default. The full list of codepages appears if you hold down the **Ctrl** key while opening the pop-up menu.

Bibliography

TrueType, OpenType and TrueType Open specifications from Microsoft:

http://www.microsoft.com/typography/tt/tt.htm

OpenType Specification:

http://www.microsoft.com/typography/otspec/default.htm

TrueType Specification by Apple:

http://fonts.apple.com/TTRefMan/index.html

Adobe Type 1 Font File Specification:

http://www.adobe.com/supportservice/devrelations/PDFS/TN/T1_SPEC.PDF

Adobe's Glyph Naming for Type 1 Font Programs:

http://www.adobe.com/supportservice/devrelations/PDFS/TN/5089_GlyphNaming.pdf

Unicode Consortium:

http://www.unicode.org

Inside Macintosh: Text: Font Manager

http://developer.apple.com/techpubs/mac/Text/Text-181.html

Inside Macintosh: Text: Script Manager (information related to scripts and languages):

http://developer.apple.com/techpubs/mac/Text/Text-354.html

Support

For further information about TransType Pro browse to the TransType home page:

http://www.fontlab.com/Font-tools/TransType/

Use the following address to get support information, TransType updates and downloads:

http://www.fontlab.com/Font-tools/FontLab-Product-Support/

In case of any questions about TransType or any other of our products use the form at:

http://www.fontlab.com/Font-tools/FontLab-Product-Support/

A Note on Intellectual Property

Digital fonts are complex computer programs created with a good deal of hard work by individuals and companies. They are valuable intellectual property and are protected by trademark, copyright, and patent laws. The details and extent of this protection varies in different countries, but the basics are as follows:

Trademark: A font name (and only the name) may be trademarked. Only the trademark owner or licensees may use the name to describe a font.

Copyright: Computer programs are copyrighted. In the U.S.A. this happens automatically as soon as the program is written. Further rights may be secured by registering the copyright.

Patent: Some fonts, if they are distinctive and unusual enough, may be granted a design patent. Only the patent holder or licensees may use this font design.

If you purchase a font and then modify it for **your own use** you are probably within the bounds of “fair use” and the font licensing agreement. However, if you modify a purchased font and then sell or distribute it you may be in violation of copyright, patent or licensing laws. Please read your font license agreement carefully or contact the licensor to determine your rights and obligations.

Appendix A
Basics of Digital Font Organization

Digital fonts consist of glyphs (drawings) of characters (letters of alphabets/scripts) organized (encoded) in a particular arrangement. Because there are many different languages and scripts each alphabet has its own arrangement (codepage) which allows a computer to know where to find a particular character, retrieve the glyph, and either print or display it for the computer user.

The most familiar "encoding" to most North Americans and Western Europeans is alphabetic order. Dictionaries, thesauri, membership lists, databases, etc. all use this "encoding" to organize their contents. Font encodings are a bit more complicated, because they must include not only the letters of the alphabet (which must be represented in both their uppercase and lowercase forms) but also punctuation, symbols, and typographic necessities (like spaces of various sizes). Early in the history of computing a standard "font" of 256 characters was decided upon because that was the number that could be addressed by one byte of data.

Of course as soon as a few more alphabets were added it became obvious that 256 characters was not nearly enough. Many different arrangements were used and it looked like every country would have its own – some several. Thus Unicode was born. Unicode is a two-byte font encoding that has room for about 64,000 characters. All known scripts of the world are (or are being) included in Unicode. While even 64000 characters is beginning to look like it may not be enough, it seems that it will be adequate for the immediate future.

Definitions

AAT (Apple Advanced Typography) fonts
the TrueType fonts especially designed for use with ATSUI. Like OpenType fonts these fonts have special features such as swashes, contextual forms, ligatures etc. These fonts are widely presented among system fonts in Mac OS X and are supported in Cocoa applications.

AFM (ASCII Font Metrics) file
A *text* file that contains the metrics information for a PC Type 1 font.

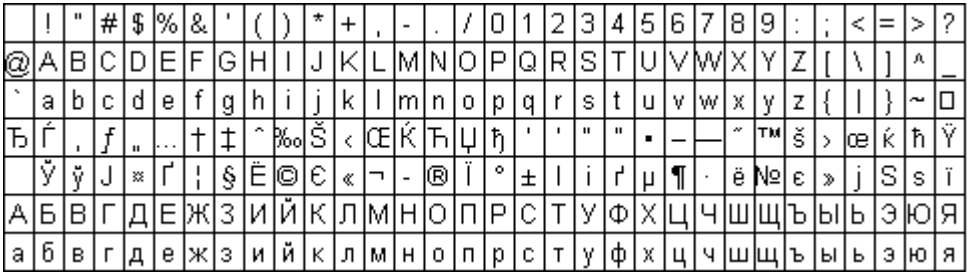
Alphabet/Script
the collection of characters used to write a particular language. “The” alphabet (as North Americans and English know it) is the script for the English language, Latin script is the script for most European, South-American and some Asian languages. Cyrillic script is used in all Slavonic languages (Russian, Ukrainian, Serbian, Bulgarian and many others). Note that a script usually includes many more characters than necessary for the one language. Latin script, for example, includes more than 200 characters.

ATSUI (Apple Type Services for Unicode Imaging)
Apple's technology and a set of routines that enable the rendering of Unicode-encoded text with advanced typographic features. It automatically handles many of the complexities inherent in text layout, including the correct rendering of text in bidirectional and vertical script systems.

Character
a symbol used in writing. The letter “A”, for instance. Every character has a name, which is used to identify it.

CMap (character map)
A table relating an encoding to a set of internal computer codes. For instance the computer may use the numbers between 1100 and 1356 to represent the characters in a font. When it needs character number 1234 it looks at the CMap table to find the corresponding code, which, in turn, directs it to the appropriate glyph.

Codepage
A 256-character portion of the Unicode encoding table (because that's how much we can address with one byte of data). The Russian codepage, for instance, contains the characters used in writing Russian:



Composite characters
The characters that have no outline, but link to other font characters. Good example of composite characters are accented characters, like 'Á', 'å' or 'ñ'.

Encoding
the linear arrangement (also called the *encoding vector*) of a script. Alphabetical order, ABCDEFGHIJ..., is the encoding of the English alphabet. In earlier days (and on many older computers) ASCII (American Symbolic Code for Information Interchange) was the standard symbol encoding for computing. The ASCII encoding looks like this:

<space>	32	0	48	@	64	P	80	`	96	p	112
!	33	1	49	A	65	Q	81	a	97	q	113
"	34	2	50	B	66	R	82	b	98	r	114
#	35	3	51	C	67	S	83	c	99	s	115
$	36	4	52	D	68	T	84	d	100	t	116
%	37	5	53	E	69	U	85	e	101	u	117
&	38	6	54	F	70	V	86	f	102	v	118
'	39	7	55	G	71	W	87	g	103	w	119
(	40	8	56	H	72	X	88	h	104	x	120
)	41	9	57	I	73	Y	89	I	105	y	121
*	42	:	58	J	74	Z	90	j	106	z	122
+	43	;	59	K	75	[	91	k	107	{	123
,	44	<	60	L	76	\	92	l	108	|	124
–	45	=	61	M	77	]	93	m	109	}	125
.	46	>	62	N	78	^	94	n	110	~	126
/	47	?	63	O	79	_	95	o	111	□	127

Notice that now a number (its "code") is assigned to each character. This is how the computer identifies the character. Also notice that there are no characters 0-31. This code range is "undefined" (meaning that its behavior is unpredictable). When Unicode came along it adopted the ASCII encoding and just added to it.

FOND resource
Macintosh terminology for the part of a Macintosh font that contains metrics information and describes the contents of a suitcase.

FontLab format
see *VFB format*

Glyph
a graphic representation of a character. An "A" may appear in many different ways:

They are all the letter "A" but each is a different glyph.

INF (Information) file
A text file that contains information about a PC Type 1 font.

Multiple master font
A special type of font format that is an extension of the Type 1 font format. Multiple master fonts contain several font styles, called master fonts, in one font file. A program that uses multiple master font can not only select one of the master fonts, but it also can select an intermediate design created by the linear interpolation of the master fonts.

NFNT resource
Macintosh terminology for the part of a Type 1 or TrueType Macintosh font that contains the bitmap font.

OpenType
OpenType font format, jointly developed by Microsoft and Adobe. OpenType fonts can be TrueType-flavored (or OpenType TT) and PostScript-flavored (or OpenType PS). Both are Unicode-encoded and support special features like swashes, contextual forms, ligatures etc.

PFB (Postscript Font Binary) file
A binary file that contains the glyph outline information for a PC Type 1 font.

PFM (Postscript Font Metrics) file
A *binary* file that contains the metrics information for a PC Type 1 font.

POST resource
Macintosh terminology for the part of a Macintosh font that contains an Adobe Type 1 font.

sfnt resource
Macintosh terminology for the part of a Macintosh font that contains a TrueType font.

Suitcase
Macintosh terminology for a file which contains information about a font or family of fonts.

Table
A set of data defining behaviors or relationships of a font. Digital fonts contain not only the drawings of their characters, but also information about how those characters should behave. Information about the spacing on each side of a character (metrics), how close particular characters should be to each other (kerning), CMaps and many other things can be kept in tables in a font.

TrueType
A font format using quadratic b-spline mathematics to describe glyph outlines. Developed and promulgated by Microsoft and Apple Computer.

Type 1 (Adobe Type 1, PostScript Type 1)
A font format using cubic b-spline mathematics to describe glyph outlines. Developed and promulgated by Adobe Systems.

Unicode range
The portion of Unicode dealing with a particular language or script. E.g. the Hebrew range, the Cyrillic range, the extended Latin range. Unicode range is not limited to 256 characters. It is usually a contiguous part of Unicode.

VFB format
the internal format of FontLab products.